# MultiSwitch Fast Ethernet Switch 948TXG

# Installation and User's Guide

Part Number: IG-DFE48-00

#### Sept 2002

This manual describes installing, cabling, and configuring the MultiSwitch Fast Ethernet Switch 948TXG when residing in a MultiSwitch 900, a MultiSwitch 900-4 and a DEChub One.

This document contains some future functionality not supported with this release. For functionality supported with Version 1.0, refer to the MultiSwitch FE Switch 948TXG Release Notes. For a complete list of future supported functionality, refer to the PDF file called Product Features located on the CD.

**Revision Information:** 

This is a revised document.

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### **NOTICES**

#### FCC Notice — Class A Computing Device:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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This is a Class A product based on the Technical Requirement of the Voluntary Control Council for Interference by Information Technology (VCCI). In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective actions.

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This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: (1) Reorient or relocate the receiving antenna. (2) Increase the separation between. (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. {3) Consult the dealer or an experienced radio/TV technician for help.

#### **CE Notice** — Class A Computing Device:

#### Warning!

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

#### Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

#### Avertissement!

Cet appareil est un appareil de Classe A. Dans un environnement résidentiel cet appareil peut provoquer des brouillages radioélectriques. Dans ce cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.

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# Preface

## **Overview**

### **About this Manual**

This manual describes installing, cabling, and configuring the MultiSwitch FE Switch 948TXG (referred to in this manual as module(s)) in a MultiSwitch 900 chassis, a MultiSwitch 900-4 chassis, a DEChub ONE docking station.

## **Intended Audience**

This manual is intended for use by personnel who are installing, setting up, cabling, and configuring the modules in a MultiSwitch 900 chassis, MultiSwitch 900-4 chassis, a DEChub ONE docking station.

# Organization

This manual is organized a	as follows:
----------------------------	-------------

Chapter/ Appendix	Description
1	Provides an overview of the MultiSwitch FE Switch 948TXG, MultiSwitch 900, and DEChub ONE. Describes module features, front and back panel descriptions, and lists features of the MultiSwitch 900, MultiSwitch 900-4, and DEChub ONE.
2	Provides instructions for installing, cabling, and removing the GBIC card and cables.
3	Provides instructions for installing and removing cables from the modules.
4	Provides instructions for configuring the module in a MultiSwitch 900 using the console port.
5	Provides instructions for configuring the module in a DEChub One using the console port.
6	Provides instructions for upgrades using the console port.
А	Provides installation-specific troubleshooting information using the LEDs.
В	Provides cable, connector, and pin assignment information.
С	Provides product specifications.
D	Provides instructions for configuring RMON groups.
Glossary	Lists and defines terms used in this manual.

Documentation

## **Documentation**

The following documents provide information relating to the MultiSwitch FE Switch 948TXG. To order any of the following documents, refer to the section titled Support Services.

Title and Order Number	Description
MultiSwitch FE Switch 948TXG Installation and User's Guide IG-DFE48-00	Provides installation, cabling, setup, and configuration information for the MultiSwitch FE Switch 948TXG installed in a MultiSwitch 900.
MultiSwitch FE Switch 948TXG Quick Start QS-DFE48-00	Provides a four-page guide for installing, cabling, setting up, and configuring information for the MultiSwitch FE Switch 948TXG installed in a MultiSwitch 900.
<i>MultiSwitch FE 948TXG Release Notes</i> RN-DFE48-01	Provides release considerations, requirements and restrictions for the MultiSwitch FE Switch 948TXG product.
MultiSwitch 900 Owner's Manual EK-DLHUB-OM	Provides installation, use, security, and troubleshooting information for the MultiSwitch 900.
MultiSwitch 900-4 Installation and Configuration Manual EK-DLHUB-IN	Provides installation, use, security, and troubleshooting information for the MultiSwitch 900-4.
DEChub Network Modules 900-Series Switch Reference EK-SWTCH-HR	Describes the functions and features of DIGITAL's HUB-based 900-Series switching products.

Conventions

## Conventions

This book uses the following conventions.

Convention	Description
Bold Type	Indicates user input.
Monospaced Type	Indicates system output.
<return></return>	Indicates that you press the Return Key.

Conventions

The following are used to call attention to important information throughout this document:

## NOTE



Calls the reader's attention to any item of information that may be of special importance.

### WARNING



Warns against an action that could result in the presence of an electrical hazar

CAUTION



Contains information essential to avoid damage to the equipment.

Ordering Options

# **Ordering Options**

Option	Part Number
MultiSwitch FE 948TXG, fixed 48-port 10/100 Mbps Switch with two GBIC ports	DFE48-MX
GBIC Card: 1000BaseSX - Short Wavelength GBIC (connections up to 550 meters over MMF)	DGMMF-SX
1000BaseLX - Long Wavelength GBIC (connections up to 10 kilometers over SMF)	DGSMF-LX
Straight-through Cable (Category 5 or 5e cable)	BN25G-xx or BN25E-xx
Crossover Cable (Category 5 cable)	BN24Q-xx
"Y" Cable (Category 5 cable)	BN24Y-xx
Single 8-pin to 8-pin straight-through Ethernet connector	555052-1 (AMP Incorporated Part Number) or equivalent
Patch Panel consisting of 8 ports providing 8-pin to 8-pin straight-through Ethernet connector	H3117-NC or equivalent
Adapter	H8585-AA
Adapter	H8571-J
Adapter	H8575-A

Support Services

## **Support Services**

To locate all MultiSwitch 900 product information online, product-specific information online, the latest firmware available, recent release note revisions, if you require additional assistance or need to contact us, please visit the web site at:

#### http://www.digitalnetworks.net/

To locate product warranty information, refer to the our web site at:

#### http://www.digitalnetworks.net/support/warranty

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# Safety

## Overview

The cautions that must be observed for the hardware are described in this manual in English, German, French, and Spanish. Any warning or caution that appears in this manual is defined as follows.

WARNING	Contains information to prevent personal injury.
CAUTION	Contains information to prevent damage to equipment.
VORSICHT	Enthält Informationen, die beachtet werden müssen um den Benutzer vor Schaden zu bewahren.
ACHTUNG	Enthält Informationen, die beachtet werden müssen um die Gerate vor Schaden zu bewahren.
DANGER	Signale les informations destinées à prévenir les accidents corporels.
ATTENTION	Signale les informations destinées à prévenir la détérioration du matériel.
AVISO	Contiene información para evitar daños personales.
PRECAUCIÓN	Contiene información para evitar daños al equipo.

WARNING	Some fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.
VORSICHT	Bestimmte Lichtleitergeräte können für die Augen gefährliches Laser- oder Infrarotlicht abstrahlen. Vermeiden Sie es daher unter allen Umständen, direkt in ein Lichtleiterkabel oder einen Lichtleiteranschluß zu schauen. Gehen Sie immer davon aus, daß Lichtleiterkabel mit einer Lichtquelle verbunden sind.
DANGER	Certains équipements à fibre optique peuvent émettre un rayonnement laser ou infra-rouge pouvant provoquer des troubles oculaires. Ne regardez jamais à l'intérieur d'une fibre optique ou d'un port de connecteur. Considérez que le câble est connecté en permanence à une source lumineuse.
AVISO	Ciertos equipos de fibras ópticas pueden emitir luz lasérica o infrarroja con riesgos de lesiones en los ojos. No se debe nunca mirar en una fibra óptica o una puerta de conexión. Siempre hay que suponer que el cable está conectado a una fuente luminosa.
CAUTION	Static electricity can damage modules and electronic components. Digital Networks recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.
ACHTUNG	Module und elektronische Komponenten können durch elektrostatische Entladungen beschädigt werden. Benutzen Sie immer eine antistatische Gelenkmanschette und eine geerdete Arbeitsunterlage, wenn Sie am offenen Gerät arbeiten.
ATTENTION	Les charges excessives d'électricité statique peuvent endommager les modules et les composants électroniques. conseille l'utilisation d'un bracelet de masse et d'un plan de travail mis à la terre lors de la manipulation des modules.

# Chapter 1

# **Product Description**

## **Overview**

#### Introduction

This chapter describes the MultiSwitch FE Switch 948TXG (referred to in this manual as the module). It also provides a brief description of the MultiSwitch 900 chassis, and the MultiSwitch 900-4.

Information is presented in this chapter as follows:

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Management Information Base Support	1-6
<b>Remote Network Monitoring Information Base</b>	1-7
Front Panel	1-8
Back Panel	1-12
The MultiSwitch 900	1-13
The MultiSwitch 900-4	1-15

## MultiSwitch FE Switch 948TXG

The MultiSwitch FE Switch 948TXG (referred to in this manual as module) provides high-density switched Fast Ethernet capability to MultiSwitch 900 users.

The MultiSwitch FE Switch 948TXG (2) (Figure 1-1) features twenty four fixed RJ-45 connections and two modular Gigabit Ethernet slots. Each RJ-45 connection can support **two** 10/100BASE-TX links. Using "Y" cable and splitting the connection allows more link connections per switch, for example, in the wiring closet.

The two modular Gigabit slots will support standard 1000BASE-SX and 1000BASE-LX GBICs. The Gigabit Interface Cards (GBIC) (1) can be installed in the module's GBIC ports.

The MultiSwitch FE Switch 948TXG also supports a combination of twelve 10BASE-TX and 100BASE-TX ports for connecting to the MultiSwitch 900 backplane.



#### Figure 1-1: Modules and Expansion Card

These modules can be installed in a MultiSwitch 900 or a MultiSwitch 900-4 (refer to the Management Agent Module), which supply power and mechanical support to the module.

The modules are configured using the module's user port and managed using the *clear*VISN MultiChassis Manager as documented in the *clearVISN Web Suite 3.1 Installation and Getting Started Guide*.

#### **Features**

The module supports the following features except where specified:

- 24 split connections allowing 48-fixed 10BASE-T/100BASE-TX RJ-45 straight-through ports for 10/100 Mbps Fast Ethernet connections.
- Provides two Gigabit Ethernet ports. The Gigabit Ethernet ports support Gigabit Ethernet Single-Mode Fiber (SMF) and Gigabit Ethernet Multi-Mode Fiber (MMF).
- Installs quickly and can be hot-swapped in a MultiSwitch 900 and MultiSwitch 900-4 chassis.
- Upgradeable device firmware (in nonvolatile flash memory) using Trivial File Transfer Protocol (TFTP) through the setup port with any TFTP server.
- Supports SNMP Management and low cost management with *clear*VISN and web-based management.
- Alarms, Events, Statistics, and History RMON group support.
- Port-level statistics for monitoring performance on every port.
- Port State and Module State LEDs for visual monitoring and troubleshooting.
- Advanced Graphical User Interface (GUI) manageability using the *clear*VISN MultiChassis Manager or its own Web-based managment.
- Support for 12 backplane channels on the MultiSwitch 900 and MultiSwitch 900-4.

### **Module Configuration and Management**

The module is configured and managed using the console interface and/or clearVISN MultiChassis Manager. For module management procedures, refer to the *clearVISN Version 3.1 Web Suite Installation and Getting Started Guide*.

NOTE	

clear VISN 3.1 + patch 4 update for clear VISN is required.

#### Ethernet

The following Ethernet features and options are available:

- Full-duplex operation over Gigabit Ethernet port.
- Full or half duplex over all 10/100 Mbps Fast Ethernet ports.
- Using 10/100BASE-TX, 10/100 Mbps autosensing over all Fast Ethernet ports.

### **Management Information Base Support**

The module provides SNMP agent support for the following Management Information Bases (MIBs) when used in a MultiSwitch 900:

## **MIB and RFC Information**

The following MIBs are supported:

- Bridge-mib
- ianaifType-mib
- Icom
- if-mib
- igmp-mib
- multiswitch-common-mib
- Pcom
- p-bridge-mib
- q-bridge-mib
- snmpv2-mib

Parts of the following MIBs are supported.

RFC1155	RFC2572	RFCgeneric
RFC1213	RFC2573n	RFCcommon
RFC1398	RFC2573t	RFCL3
RFC1493	RFC2574	RFCTMS
RFC1724	RFC2575	RFCBCM5600
RFC1757	RFC2665	RFC2571
RFC1850	RFC2674p	RFCIDB
RFC1902	RFC2674q	RFCTMS
RFC1906	RFCIANA	RFC2233
RFC1907	RFCWRS	

MIB and RFC information can be found online at the following Web Site:

http://www.digitalnetworks.com/dr/hubs/platform/

#### **Remote Network Monitoring Information Base**

The MultiSwitch FE Switch 948TXG supports sophisticated Ethernet monitoring with the Remote Network Monitoring Information Base (RMON-MIB). The following RMON features and options are available:

- RMON functions are performed concurrently with the module's switch function.
- RMON within the module is accessible by multiple managers.
- Basic RMON capability at the LAN level for the following groups:
  - **Statistics**. Measures various statistics for the monitored Fast Ethernet channel including utilization, packet rates, broadcast and multicast rates, and error information.
  - History. Captures periodic statistical samples for later retrieval and analysis.
  - Alarms. Specifies thresholds for various monitored variables in order to generate events.
  - **Events**. Controls the generation and notification of events from the probe.

For information on how to access and use the basic RMON features, refer to Appendix D.

### **Front Panel**

Figure 1-2 shows the location of the MultiSwitch FE Switch 948TXG Front Panel components.

Figure 1-2: Module Front Panels



 Table 1-1 describes the module Front Panel components.

Table 1	-1: M	odule Fr	ont Pai	nel Com	ponents
---------	-------	----------	---------	---------	---------

ltem	lcon	Name	Description
1		Power OK LED	Indicates the module's power status. On indicates that the module has power. Off indicates that the module has no power.
2	$\bigcirc$	Module OK LED	Indicates the module's self-test status. <b>On</b> indicates that the module passed self-test. <b>Off</b> indicates the module failed self-test.
3		Console Port	Connects a user terminal that is used to manage the module. Uses an 8-pin MJ connector.

ltem	lcon	Name	Description
4		Port Status Mode LEDs	Display the current mode of the Port Status LEDs for port connections 1-60 on the 948TXG. The five Port Status modes are Port State, Link State, Duplex State (FDX), Speed State (10/100 Mbps), and Link Activity. Only one Port Status mode LED is ever lit at one time, and the mode is determined by the Port Status mode push button (see Item 5). When no Port Status Mode LEDs are lit, the Port Status LEDs indicate link activity; this is the default mode.
# FDX <b>••••••</b> <b>•••</b> •••••••••••••••••••••••	Port State Mode LED	When lit, the Port Status LEDs provide information about the state of the port as it applies to the switching function, such as management shutdown, spanning tree state, and so on.	
			<b>On</b> indicates an Active Connection (implying a Spanning Tree state of <b>forwarding</b> ).
			Blinking Green indicates any of the following:
			• port disabled by management,
		• spanning tree is in listening, learning, or blocking mode, or	
		• failed diagnostics.	
			<b>Off</b> indicates that there is no connection.
		Link State Mode LED	When lit, the Port Status LEDs display information about the state of the link.
	<b>T</b> 20 100		<b>On</b> indicates Link State Up or active link present.
			Off indicates Link State Down or no active link.
		FDX State Mode LED	When lit, the Port Status LEDs display information about the Duplex mode of the link.
	T 📀 100		On indicates Full-Duplex Connection.
		Off indicates Half-Duplex Connection.	
	# FDX	10/100 Mbps Mode LED	When lit, the Port Status LEDs provide information about the speed of the link, either 10 or 100 Mbps.
	l 🗢 100		On indicates 100 Mbps Connection.
			Off indicates 10 Mbps Connection.

ltem	lcon	Name	Description
	# FDX	Port Activity Mode LED	When all Port Status Mode LEDs are off, the Port Status LEDs are in Link Activity mode.
	<b>I</b> © 100		On indicates a steady amount of network traffic.
			<b>Blinking</b> indicates a lower amount of network traffic.
			Off indicates no network traffic.
5		Port Status Mode Push Button	Controls the displays of the four mode LEDs and the port Status LED display. Pressing the button advances to the next mode. The default is Link State. After the button is pushed, the mode remains activated for 45 seconds. The mode then reverts to Link Activity mode.
6		Port Status LEDs	Each connector has two10/100BASE-TX links that use a <b>Y</b> cable and split the connection. The two links are associated with cables labeled "A" and "B". The Port A and Port B cables are wired as switch nodes, and can be connected to end nodes, such as computers without a crossover adapter. There is one LED for each port that provides information about transmitting and receiving packets for that port. <b>Note:</b> All Port Status LEDs display according to the
	Ā ──⊳ N Ā B		is also displayed via the Port Status LEDs. Link Activity mode is indicated when all Port Status Mode LEDs are Off - the default state.
			On indicates a Steady amount of Network Traffic.
			<b>Blinking</b> indicates a Lower amount of Network Traffic.
			Off indicates no Network Traffic.
		Ports 1-48 (on the 948TXG) 10/100BASE-TX, RJ-45	Used to connect end devices such as computers and servers, or switch devices, such as other switches or repeaters. Switch devices require a crossover cable or adapter to connect to an uplink.
7	0	GBIC Ethernet Port	On indicates port activity.
	# →	Activity LED	Off indicates No activity.

Item	lcon	Name	Description
8	●	GBIC Ethernet Port Status LED	On indicates an Active connection. Blinking Green indicates disabled by management. Off indicates No activity.
9		Ports 61 and 62 are Gigabit Ethernet ports for GBIC expansion card(s)	Support for Gigabit Ethernet Multi-Mode Fiber (MMF) and Gigabit Ethernet Single-Mode Fiber (SMF). This illustration shows the SC Fiber version of the GBIC.
10		Ethernet Label (MAC Address)	Used for the Ethernet address.
11	808080 808080 808080 808080 808080 808080	LEDs 49 through 60 (Backplane channel LEDs)	Provides information about transmitting and receiving packets on each backplane channel. These LEDs provide the same information as the LEDs of the first 48 ports. Their meanings are also governed by the Port Status Mode LEDs.
			<b>On</b> indicates a Steady amount of Network Traffic.
			<b>Blinking</b> indicates a Lower amount of Network Traffic.
			Off indicates no Network Traffic.

### **Back Panel**

Figure 1-3 shows the location of the MultiSwitch FE Switch 948TXG Back Panel components.





 Table 1-2 below describes the module Back Panel components.

ltem	Name	Description
1	Locking Tab	Secures the module to a MultiSwitch 900 chassis and a MultiSwitch 900-4 chassis.
2	48-pin Connector	Provides network and power connections to the module when it is installed in a MultiSwitch 900 chassis or a MultiSwitch 900-4.
3	Manufacturing Label	Lists the module part number, serial number, revision level, and power requirements.
4	160-pin Connector	Provides network and backplane connections to the module when it is connected to a MultiSwitch 900 chassis or a MultiSwitch 900-4 chassis.
5	Mounting Tab	Attaches the module to a MultiSwitch 900 chassis and a MultiSwitch 900-4 chassis.
6	Grounding Strip	Provides chassis grounding between the modules and the MultiSwitch 900 chassis or MultiSwitch 900-4.

Table 1-2: Module Back Panel Components

#### The MultiSwitch 900

## The MultiSwitch 900

The MultiSwitch 900, detailed in Chapter 3, supports multiple network technologies and uses industry standard protocols. It uses advanced technology to provide complete backward compatibility with the DEChub 90 network modules.

The MultiSwitch 900, with a complement of network modules installed, becomes an integral part of any distribution subsystem within a structured wiring environment.

#### **Network Management Architecture**

For network management, the MultiSwitch 900 uses industry-standard Simple Network Management Protocol (SNMP) and a network management station (NMS) with native SNMP, and in-band and out-of-band support.

#### **MultiSwitch 900 Features**

The MultiSwitch 900 chassis supports up to eight MultiSwitch 900 or DEChub 90 modules. These modules can be installed, in any combination, in slots 1 to 8. It has the following advanced hardware features.

Feature	Description
90 Series Compatibility	The MultiSwitch 900 supports all the DEChub 90 series network modules.
Hot Swap Capability	The network modules and power supply modules can be installed or swapped with the power <b>On</b> . This is referred to as a hot swap. Hot swapping allows for upgrades, modifications, or replacement of modules without interruption to other users or the MultiSwitch 900.
Incremental Power System	The MultiSwitch 900 power system is designed to allow for the installation of incremental power supply modules for system expansion. Up to four power supply modules can be installed into the MultiSwitch 900. All power supply modules share power delivery to the chassis and to the network modules on a common bus.
Redundant Power	If a single power supply module provides enough power for the MultiSwitch 900, and you add a second power supply module, then the MultiSwitch 900 has redundant (N+1) power. If either of the power supply modules fail, the MultiSwitch 900 continues to operate without interruption.

The MultiSwitch 900

#### **Management Features**

The MultiSwitch 900 has many advanced management features.

#### **Chassis Manager**

The built-in MultiSwitch 900 management agent, the Chassis Manager provides:

- Configuration and control of the MultiSwitch 900 chassis and the installed modules.
- Chassis setup port.
- Chassis in-band management (900-4 only).
- Remote Monitor (RMON) Alarms and Events support.
- Chassis Status Display.
- Chassis Management Information Base (MIB).
- Simple Network Management Protocol (SNMP) integrated into the chassis's Chassis Manager.

#### **Power Management**

The Chassis Manager monitors the power system and displays power system messages in the Chassis Status display. The messages provide information about the power system status and the amount of power available in the MultiSwitch 900. This information, in addition to the power needs of a network module (from the module label), lets you determine whether enough power is available to install a network module in the MultiSwitch 900.

The Chassis Manager performs the following power-related functions:

- Powers a fully configured MultiSwitch 900 with power redundancy.
- Monitors the power system.
- Calculates the power available to network modules.
- Displays the power status and available power to its LCD display.
- Allocates power to network modules.
- Does not allocate power from network modules when there is a power system failure in a non-redundant power configuration.

For additional information about the MultiSwitch 900, refer to the *MultiSwitch 900 Owner's Manual*.

#### The MultiSwitch 900-4

## The MultiSwitch 900-4

The MultiSwitch 900-4 is a versatile, four-slot chassis that provides multi-technology integration. It supports Ethernet, Fast Ethernet, FDDI, ATM, and VNbus technologies. The chassis accommodates any combination of MultiSwitch 900 and MultiSwitch 600 modules. The MultiSwitch 900-4 is managed with *clear*VISN.

### MultiSwitch 900-4 Features

The MultiSwitch 900-4 chassis supports up to four MultiSwitch 900 or MultiSwitch 600 modules. These modules can be installed in any combination in slots 1 to 4. It has the following advanced hardware features.

Feature	Description
900 Series Compatibility	Uses any combination of MultiSwitch 900 modules. These hardware modules are ordered separately and support various networking requirements.
600 Series Compatibility	Uses any combination of MultiSwitch 600 modules. These hardware modules are ordered separately and support various networking requirements.
900 Series and 600 Series module Compatibility	Uses any combination of MultiSwitch 900 and MultiSwitch 600 modules. These hardware modules are ordered separately and support various networking requirements. For information about installing modules in the MultiSwitch 900-4, see the documentation that accompanies the module.
Technology Support	Independent and supports Ethernet, Fast Ethernet, FDDI, ATM, and the VNbus.
Hot Swap Capability	Hot-swaps MultiSwitch 900 and MultiSwitch 600 modules, the Management Agent Module, and the power supply making it easy to accommodate network changes without disrupting users.
Incremental Power System	Preconfigured with one power supply. This power supply module provides power to the whole system.
Backplane functionality	Has a unique, open technology backplane functionality that is defined by firmware, not limited by hardware.
Mounting	Fits on a desktop, can be rack-mounted, or wall-mounted.

The MultiSwitch 900-4

Feature	Description
Redundant Power	Has an optional power supply available to provide the MultiSwitch 900-4 with a redundant source of power. If a single power supply module provides enough power for the MultiSwitch 900-4, and you add a second power supply module, then the MultiSwitch 900-4 has redundant (N+1) power. If either of the power supply modules fail, the MultiSwitch 900-4 continues to operate without interruption.

### **The Management Agent Module**

A Management Agent Module provides network management for the MultiSwitch 900-4 through the industry-standard SNMP and a Network Management Station (NMS) with native SNMP and inband and out-of-band support. The Management Agent Module includes the following features.

Feature	Description
IP Address Management	Has single IP address that manages an entire MultiSwitch 900-4.
RMON Support	Supports four groups of RMON.
Configuration	Supports easy, low-cost management with <i>clear</i> VISN with simple point-and-click commands that let network managers configure and reconfigure the chassis to accommodate changing networks.
Network Management	Provides a connection to a network management station, either in- band or out-of-band.

The Management Agent also communicates with the functional modules installed in the MultiSwitch 900-4 (also preconfigured with a Management Agent Module).

For information on installation and configuration, refer to the *MultiSwitch 900-4 Installation and Configuration Manual*.
# **Chapter 2**

# Installing, Cabling, and Removing the GBIC

# **Overview**

### Introduction

This chapter describes how to install, cable, and remove the optional Gigabit Interface Card (GBIC). For information on removing cables from the module, refer to Chapter 3.

# In this Chapter

Торіс	Page
About the GBIC	2-2
Unpacking the GBIC	2-3
Installing the GBIC	2-4
Connecting the GBIC SC Cable	2-5
Removing the GBIC SC Cable	2-7
Removing the GBIC	2-8

About the GBIC

# About the GBIC

**Figure 2-1** shows the two GBIC slots and the GBIC. The GBIC (1) is inserted into the Front Panel of the MultiSwitch FE Switch 948TXG module (2), which has two GBIC ports.

The GBIC provides an operating speed of 1000 Mbps transmission between the module and a host device. The two GBIC slots support 1000BASE-SX, short wavelength using two multi-mode fiber-optic connectors, and 1000BASE-LX, long wavelength single mode fiber-optic connectors.





948TXG\_01

Unpacking the GBIC

# **Unpacking the GBIC**

The optional GBIC is ordered and shipped separately from the module. To unpack the GBIC, complete the following steps:

Step	Action	
1	Remove the contents from the box and be sure to keep all original packing materials. The GBIC comes packed in protective antistatic material. You should not remove the GBIC from the antistatic wrapping material until you are ready to install the GBIC.	
	<b>CAUTION</b> Static electricity can damage modules and electronic components. We recommend using a grounded antistatic wrist strap and a grounded work surface when handling any modules.	
2	Check the shipment for damaged parts. Also check the shipment for missing parts (refer to Appendix D). In case of damaged or missing parts, contact your delivery agent and your sales representative.	

Installing the GBIC

# Installing the GBIC



Do not install or remove a GBIC while the module is powered on. GBICs must not be hot-swapped; they must only be inserted in or removed from a module that is powered off.

To install the GBIC into a module, complete the following steps:

Step	Action
1	Remove the module from its power source prior to installing the GBIC.
2	Install the GBIC as specified in the detailed instructions shipped with the product.

Connecting the GBIC SC Cable

# **Connecting the GBIC SC Cable**

The GBIC supports Single-Mode Fiber (SMF) or Multi-Mode Fiber (MMF) port connectors.



Some fiber-optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber-optic or connector port. Always assume the cable is connected to a light source.

 Table 2-1 and Table 2-2 describe supported Short Wavelength and Long Wavelength cable distances. Note: refer to Appendix B for cable part number information.

Table 2-1:         Short Wavelength (up)	to 550 Meters)
------------------------------------------	----------------

Fiber Size	Fiber Bandwidth	Distance
62.5 Microns (MMF) <sup>1</sup>	160 MHz per Kilometer	2 to 220 Meters <sup>2</sup>
	200 MHz per Kilometer	2 to 275 Meters
50.0 Microns (MMF)	400 MHz per Kilometer	2 to 500 Meters
50.0 Microns (MMF)	500 MHz per Kilometer	2 to 550 Meters

<sup>1</sup>Indicates Multimode Fiber.

 $^2 \mbox{Requires offset launch fiber jumper.}$ 

#### Table 2-2: Long Wavelength (up to 5 Kilometers)

Fiber Size	Fiber Bandwidth	Distance
62.5 Microns (MMF) <sup>1</sup>	500 MHz per Kilometer	2 to 550 Meters <sup>2</sup>
50.0 Microns (MMF)	400 MHz per Kilometer	2 to 500 Meters
50.0 Microns (MMF)	500 MHz per Kilometer	2 to 550 Meters
10.0 Microns (SMF) <sup>3</sup>	N/A	2 to 5,000 Meters

<sup>1</sup>Indicates Multimode Fiber.

 $^{2}\mbox{Requires offset launch fiber jumper.}$ 

<sup>3</sup>Indicates Single-Mode Fiber.

Connecting the GBIC SC Cable

The GBIC ships with a dust cover to protect the fiber-optics connectors. To connect the SMF or MMF cable (**Figure 2-2**), complete the following steps.

Step	Action
1	Remove the dust cover from the GBIC (save for future use).
2	Align the tab on the cable plugs (1), with the keyway on the GBICs port connector (2).
3	Insert the cable plug into the GBIC, ensuring that the release tab snaps into the locked position.
4	Connect the other end to your host or network device.

Figure 2-2: Connecting the GBIC SC Cable



948TXG\_14

Removing the GBIC SC Cable

# Removing the GBIC SC Cable

To remove SMF or MMF fiber-optic cables from the GBIC (**Figure 2-3**), complete the following steps:

Step	Action
1	Attach one end of the antistatic wrist strap to your wrist and the other end to the chassis ground.
2	Carefully pull the cable connector straight-out from the GBIC (1).
3	Place the cable into a static-proof bag.
4	Insert the dust cover plug into the GBIC to protect fiber-optic connectors.

#### Figure 2-3: Removing the GBIC SC Cable



948TXG\_13

Removing the GBIC

# **Removing the GBIC**



Do not install or remove a GBIC while the module is powered on. GBICs must not be hot-swapped; they must only be inserted in or removed from a module that is powered off.

To remove the GBIC from the module, complete the following steps:

Step	Action
1	Remove the module from its power source prior to removing the GBIC.
2	Remove the GBIC as specified in the detailed instructions shipped with the product.

# **Chapter 3**

# **Installing and Removing Modules and Cables**

# **Overview**

## Introduction

This chapter describes how to install and cable the MultiSwitch FE Switch 948TXG module in a MultiSwitch 900.

# In This Chapter

Торіс	Page
Installing the Module in a MultiSwitch 900	3-2
Task 1: Compare the Power Ratings	3-3
Task 2: Seat the Module in the MultiSwitch 900	3-4
Task 3: Verify Initial LED Operation	3-5
Task 4: Cabling the Console Port on the Module	3-6
Task 5: Cabling the 10/100BASE-TX Ports on the Module	3-9
Removing Cables and Modules	3-12

# Installing the Module in a MultiSwitch 900

The hot-swapping feature of the MultiSwitch 900 allows you to install the module into the MultiSwitch 900 without turning the power **Off**. If you are using a GBIC, you should install the GBIC in the module before installing the module in the MultiSwitch 900 or MultiSwitch 900-4. Seating the module initiates the module's power-up sequence.

The following table describes the tasks necessary for installing the module in a MultiSwitch 900.

Task	Description
1	Compare the power ratings.
2	Seat the module into the MultiSwitch 900.
3	Verify initial LED operation.
4	Cable the Console Port on the module.
5	Cable the module 10/100BASE-TX ports.

### **Task 1: Compare the Power Ratings**

Compare the module's power ratings (1) with the available power value shown in the MultiSwitch 900 Manager Status display (2) (see **Figure 3-1**). For the MultiSwitch 900, the 12-volt power is derived from the 15-volt power source. Although it is listed separately in the Product Specification for the modules, the 12-volt requirements are included in the MultiSwitch 900 15-volt power total. Module power requirements are defined in Appendix C.

If any of the modules' power requirements exceed the available power value shown in the status display, add another power supply (see the *MultiSwitch 900 Owner's Manual*). The module does not power **On** or operate if adequate power is not available. (This is slot dependent.)



Figure 3-1: Example Module Power Ratings

# Task 2: Seat the Module in the MultiSwitch 900

Complete the following steps to seat the module in a MultiSwitch 900 as shown in Figure 3-2:





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Step	Action
1	Place the module's mounting tab into a mounting slot (1) on the MultiSwitch 900.
2	Pull up the release lever (2) to its unlocked position.
3	Pivot the module on the mounting slot and align the connectors.
4	Firmly push the module onto the backplane connectors.
5	Press down on the release lever (3) to ensure that the module is locked.

# **Task 3: Verify Initial LED Operation**

Verify that the power LED and the OK LED on the module light within approximately one minute (see **Figure 3-3**).





The following table describes the LEDS as shown in Figure 3-3.

Stage	Description
1	The Power LED lights when power is applied to the module, then the module performs a self-test.
2	After the module completes self-test, the Module OK LED lights and remains lit. The Hub Manager identifies the module as the MS Switch 948TXG.



If the LEDs do not operate as described, refer to Appendix A.

## Task 4: Cabling the Console Port on the Module

This section describes how to connect the console port cable to the console port on the module (Figure 3-4).

If the setup port device is	Use this cable	With this adapter
A PC with a 9-pin D-Sub communications port	BN25G- $xx^1$ or BN24Y- $xx^1$	H8585-AA
A PC with a 9-pin D-Sub communications port	BN24H- <i>xx</i> <sup>1</sup>	H8571-J
A terminal with a 25-pin D-Sub connector	BN24H- <i>xx</i> <sup>1</sup>	H8575-A
A terminal with a 6-pin MMJ connector	BN24H- $xx^1$	Not required

Use one of the following cables to connect the console port device to a terminal or PC:

<sup>1</sup>xx indicates cable length in meters.

For more information on pin assignments and determining the appropriate cable type to use, refer to Appendix B, *Connectors, Pin Assignments, and Cables.* 

Configure the setup port device (terminal or PC) as follows:

- 9600 baud
- 8 bits
- No parity
- 1 stop bit
- Software flow control



Figure 3-4: Console Port Cable Connection on the Module

Step	Action
1	Align the release tab (1) on the cable plug with the connector (2) on the module's console port.
2	Insert the plug into the port connector (2) until the release tab snaps into the locked position.
3	Connect the other end of the cable to a console device (PC, workstation, terminal).

For more information on determining the appropriate cable type to use, refer to Appendix B, *Connectors and Pin Assignments.* 

### **Serial Console Port Cable Connections**

Figure 3-5 describes how the connect the console port to a host using one of two methods.

Method A uses only Port A. This method assumes that a BN25G cable is connected directly to an end-node such as a PC.

Method B uses both Port A and Port B. This method assumes that a BN24Y cable connects either to a straight-through coupler or to a patch panel and the BN24Y cable is used to connect to both Port A and Port B.



In Method B, Port B is used only for Firmware Upgrades.

# Figure 3-5: Console Port Cabling





## Task 5: Cabling the 10/100BASE-TX Ports on the Module

This section describes how to connect 10/100BASE-TX cables to ports on the modules (see Figure 3-6). The 10/100BASE-TX fixed ports on the modules have crossover port connectors. Use the appropriate cable type (crossover or straight-through) to ensure that the module's transmit and receive signals connect correctly to the connected device. Before connecting the cables to the port, note the guidelines in Table 3-1. These guidelines ensure that the sum of crossovers always equal an odd number, which is required for proper operation.





Step	Action
1	Align the release tab (1) on the cable plug with the connector (2) on the module's 10/100BASE-TX port.
2	Insert the plug into the port connector (2) until the release tab snaps into the locked position.
3	Connect the other end of the cable to a network device (PC, workstation, switch or repeater).

For more information on determining the appropriate cable type to use, refer to Appendix B, *Connectors, Pin Assignments, and Cables.* 

For example, when connecting a PC or a workstation, use a straight-through cable.

Table 3-1: Cabling 10/100BASE-1X Crossover Connector on Module			
If the connector on the remote device is	Use this cable type		
Straight-through connector	Straight-through cable		
Crossover connector	Crossover cable		

 Table 3-1:
 Cabling 10/100BASE-TX Crossover Connector on Module

For more information on determining the appropriate cable type to use, refer to Appendix B, *Connectors, Pin Assignments, and Cables.* 

## **Dual Port Fast Ethernet Cable Connections**

Figure 3-7 describes how the connect the console port to a host using one of three methods.

Method A uses both Port A and Port B. This method assumes that a BN24Y cable is used to connect to both Port A and Port B.

Method B uses only Port A. This method assumes that a BN25G cable is connected directly to an end-node such as a PC.

Method C uses both Port A and Port B. This method assumes that a BN25G cable connects to an office wall plate or to a patch panel and the BN24Y cable is used to connect to both Port A and Port B.

#### Figure 3-7: Dual Port Fast Ethernet Cabling



Removing Cables and Modules

# **Removing Cables and Modules**

# **Removing the Console Port Cable**

Complete the following steps to remove the console port cable from the module as shown in **Figure 3-8**.



Figure 3-8: Console Port Cable Removal on the Module

Step	Action
1	Push in on the release tab (1) and remove the connector from the module's Console port (2).
2	Remove the other end of the cable from the network device (PC or workstation), if needed.

**Removing Cables and Modules** 

# Removing Cables from 10/100BASE-TX Fixed Ports

Complete the following steps to remove 10/100BASE-TX cables from the module as shown in **Figure 3-9**.





Step	Action
1	Push in on the release tab (1) and remove the connector from the module's 10/100BASE-TX port (2).
2	Remove the other end of the cable from the network device (PC or workstation), if needed.

Removing Cables and Modules

# **Removing Modules from MultiSwitch 900**

To remove the module from the MultiSwitch 900 (hot-swappable), complete the following steps (see **Figure 3-10**):



## Figure 3-10: Removing the Module from a MultiSwitch 900

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Step	Action
1	Lift the release lever (1) located at the top of the MultiSwitch 900 slot.
2	While holding up the release lever (2), pivot the module back on its bottom mounting tab (3).
3	Remove the module.

# **Chapter 4**

# Configuring the Module in a MultiSwitch 900

# **Overview**

## Introduction

This chapter describes how to configure the module using either the MultiSwitch 900 setup screens or the module's console port.

This chapter contains future functionality not supported with this release. For functionality supported with Version 1.0, refer to the MultiSwitch FE Switch 948TXG Release Notes. For a complete list of future supported functionality, refer to the PDF file called Product Features located on the CD.

#### In This Chapter

Information in this chapter is organized as follows:

Торіс	Page
MultiSwitch 900 Installation Menu	4-2
Using the Console Port to Configure the Module	4-4
Using Menus to Configure the Module	4-7

MultiSwitch 900 Installation Menu

# **MultiSwitch 900 Installation Menu**

Figure 4-1 shows the MultiSwitch 900 Installation Menu. To view the module's setup screen, choose option [9], Start Redirect Mode.



To access this menu, a terminal or terminal emulator must be connected to the Setup Port on the MultiSwitch 900.

#### Figure 4-1: Sample Digital Multiswitch 900 Installation Menu

```
MultiSwitch 900
-------
      MultiSwitch 900 INSTALLATION MENU
       [1] Restart with Factory Defaults
       [2] Restart with Current Settings
       [3] Show Current Settings
       [4] Configure IP ...
       [5] Dump Error Log
       [6] Downline Upgrade
       [7] Configure Out-of-Band Port ...
       [8] Start Event Display Mode
       [9] Start Redirect Mode
       [10] Product-Specific Options...
Enter selection number: 9 <Return>
        Press Return for Main Menu...
```

MultiSwitch 900 Installation Menu

## [9] Start Redirect Mode

The Start Redirect Mode option redirects the MultiSwitch 900 Chassis Manager setup port to the setup port of any network module (such as the MultiSwitch FE 948TXG) that is installed into the MultiSwitch 900. This option allows you to configure or obtain status of an installed network module by accessing the specified network module's installation menu.

After you choose the Start Redirect Mode option from the MultiSwitch 900 Installation Menu, the screen prompts you for a slot number as shown in the following example. After you enter the number of the slot in which the module is installed, the console is redirected to this slot.



The slot number may change to reflect the slot number in which your module is installed.

The following example shows you how to redirect the console to a specific slot:

```
Enter the slot number for redirection (1-8): 8 <Return>
Console redirected to 8: MS Fast Ethernet 948TXG - slot 8
Attempting connection [Ctrl/C to Abort]...
```

If the redirection is successful, after you press Return, the module INSTALLATION MENU appears on your screen. If redirection is not successful, for example, you entered a number for an empty slot, you can press Return to start again at the MultiSwitch 900 Installation Menu.

Go to the section titled Using Menus to Configure the Module on page 4-7.

Using the Console Port to Configure the Module

# Using the Console Port to Configure the Module

You can access the module's configuration menus by connecting a terminal to the console port, or using Telnet to access the switch over the network.

The console port must be cabled prior to configuration (refer to *Cabling the Console Port on the Module* on page 3-6).

One of the first things that should be done with a newly installed product is to access the Switch Configuration menu and set all the parameters unique to your network. Until the module has been configured with an IP address only management operation via Console port or the MS 900 Chassis Manager will be effective. Once the module has been assigned an IP address, Telnet sessions and in-band management are possible.

The 948TXG can be configured via several methods listed below:

- Command Line Interface (CLI)
  - Using the front Serial port (Console port)
  - Using the MS900 (backplane) serial port (via the MAM)
- Web browser

- Using an Ethernet port (in band management)

### **Telnet User Access**

You may use a Telnet session to manage the MultiSwitch FE 948TXG directly using in-band management via one of it's Ethernet ports or via a redirect through the MS 900 Chassis Manager.

Direct connection:

When using Telnet to connect to the FE 948TXG management you will need to specify the IP address of the Switch and a password. The default password is **[Null]** so just press the **[Enter]** key at the login prompt to go to the Main Menu.

#### Redirect connection:

Refer to the section titled START REDIRECT MODE. You will need to supply a Chassis Manager password. Once redirected to the slot containing the FE 948TXG you will be presented with the INSTALLATION MENU. The FE 948TXG Login Menu will not be displayed.

Using the Console Port to Configure the Module

### Menu Layout

The following example shows a typical Installation / main menu layout with descriptions:



This menu shows what CLI screens are available:

The following example shows a typical input menu layout with descriptions.



Using the Console Port to Configure the Module

## **Menu Option Selection**

Each selectable item within the menu screen is selected by the **[Tab]** key cycling thru the selectable items and pressing the **[Enter]** key for the next screen. Items enclosed in [] contain editable parameters. Items enclosed in < > indicate predefined values.

Depending on the selection, one of three actions will occur:

- If the selected item is a submenu title, the submenu is displayed when the [Enter] key is pressed.
- If the selected item requires a field input, the system displays a prompt for entering the new parameter value. You then press the **[Enter]** key to enter the value.
- If the selected item has a fixed set of predefined values, each click of the **[Spacebar]** key will cycle through its values. Pressing the **[Enter]** key will enter the new value.
- Note: Input and Selectable Field entries are not activated until the APPLY option for the menu is processed by the [Enter] or RETURN key. APPLY changes are active until a reset occurs. Use the Save key to save the input and selectable changes permanently.

#### **Screen Menu Option:**

At the bottom of the screen menu is a menu option item.

- 1) MAIN MENU- will go to Main Menu screen without applying or saving changes made to this screen.
- 2) APPLY- will apply changes made in the screen immediately. These changes will be effective until a power up or reset occurs at which time the parameters will revert to the previously saves values.
- 3) SAVE will apply changes made immediately and save them to be used when a power up or a reset occurs.
- 4) HELP- will provide some basic help for navigating the menu.

HINT LINE: Provides additional details on the item highlighted.

#### **Advanced User CLI Commands**

Command	Description
Ctrl F	Will cause the screen to refresh
Ctrl L	Will cause the screen to refresh
Ctrl T	Pause/ resume screen updates
Ctrl U	Pause screen updates & clear screen
Ctrl W	Clear screen only
Ctrl P	Show reset values

# Using Menus to Configure the Module

These menus allow you to configure the switch from its factory-default settings, as well as to monitor switch status and performance.

The following menu shows the options available from the module INSTALLATION MENU when the module is operating in a MultiSwitch 900 configuration. Depending on the configuration state of the module, some options may not appear.

🗾 Telnet - 172.18.112.3		
Connect Edit Terminal Help		
sysUpTime: 0 Days 07:3	23 : 41	L3 - 172.19.111.67 MultiSwitch 948TX(
	Switch Configuration	
	Port Statistics	
	Configuration Upload/Download	
	Image File Download	
	Serial Configuration	
	Change Password	
LOGOUT		HELP
Setup IP Parameters, Su	witch Configuration Flags, Time and	d Reset
Selection		Page
Switch Configuration		4-9
		4 10
Port Statistics		4-10
Port Statistics Configuration Upload / 2	Download	4-10 4-11
Port Statistics Configuration Upload / Image File Download	Download	4-10 4-11 4-12
Port Statistics Configuration Upload / Image File Download Serial Configuration	Download	4-10 4-11 4-12 4-13



Periodically, upgrades to the firmware are released. If you need to upgrade the firmware of an existing module, use the Downline Upgrade procedures provided in the MultiSwitch Fast Ethernet 948TXG Release Notes.

Examples of Console Screen displays are provided in this section to illustrate the options that are available. Because they are examples, the displays may vary slightly from the actual screen displays on your console display device.

## **Switch Configuration**

This menu allows you to change the factory defaults of the FE 948TXG In-Band & Out of Band IP address, Subnet mask, and Default Gateway settings, specific to your Network.

To reset the module without losing any existing settings, tab down to, [Reset] and cycle thru the options using the spacebar selecting <Reset>.To reset to factory defaults select <Reset Factory Defaults>.



*This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.* 

This menu also provides public and private access to information and parameters affecting the function of and/or movement of packets through the switch. For example Spanning Tree, BootP, and DHCP.

SNMP: Read-only & Read-Write access name to the device. (1-20 character range max) default name shown.

When all parameters are correct Tab down to menu option and select **Apply** or **Save** for your settings.

<b></b> Telnet - 10.1.192.175			
<u>Connect</u> <u>E</u> dit <u>T</u> erminal <u>H</u> elp			
Switch Configuration			MultiSwitch 948TXG
sysUpTime: 0 Days 18:1	1:40		L2 - 10.1.192.130
In Band	: IP Address Subnet Mask Default Gateway	: [ <mark>10.1.192.130</mark> : [255.255.0.0 : [10.1.1.1	] ] ]
Out of Band	: IP Address Subnet Mask Default Gateway	: [10.1.192.135 : [255.255.0.0 : [10.1.1.1	1 1 1
	MAC Address SNMP RO Community SNMP RW Community	: 00:10:64:8D:9E: : [public : [private	80 ] ]
	Spanning Tree BOOTP DHCP	: <enable> : <disable> : <disable></disable></disable></enable>	
	Reset	: <no reset<="" th=""><th>&gt;</th></no>	>
MAIN MENU APPLY SA	VE ip decimal do <del>t for</del>	mat ( o o 200 121	HELP
cifter agent if address	IN GECIMAL GOL FOR	mat (e.g., 203.131	.203.13)

### **Port Statistics**

This menu allows you to display and change information for each port in the module, as well as monitor its configuration activity. Select the **Port** number (1-62) where  $\langle n \rangle =$  the port you wish to change using the **[Spacebar]** key. Tab down to **State** to  $\langle Enable \rangle$  or  $\langle Disable \rangle$  the port with the **[Spacebar]** key. Then Tab over to **Set Speed** and select one of the following:  $\langle Half-10 \rangle$ ,  $\langle Full-10 \rangle$ ,  $\langle Full-100 \rangle$ , or  $\langle Auto-negotiate \rangle$  with the **[Spacebar]** key. When all parameters are correct Tab down to the menu option and select **Apply** or **Save** for your settings.



Do not use this menu to change the backplane ports (49-60). You must use the clearvisn software to update the port configuration.

The following shows the CLI screen associated with this option.

🚮 Telnet - 172.18.1.30		<b>N</b>	_ 🗆 🗙
<u>Connect</u> <u>E</u> dit <u>T</u> ermina	al <u>H</u> elp	N	
Port Statistics			MultiSwitch 948TXG
sysUpTime: 1 Days (	04:52:00	L	3 - 172.18.1.30
Port: < 1> ifIndex	<b>:</b> 0x02100001		
State: <enable> Link: Up</enable>	≻ Set Speed: Actual Speed:	≺autonegotiate ≻ STP Sta full-100	te: Forwarding
RMON (etherStats):	:		
DropEvents	0	Jabbers	0
Octets	542986681	Collisions	0
Pkts	2106917	Pkt640ctets	538107
Broadcasts	207102	Pkts65to1270ctets	356367
Multicasts	894888	Pkts128to2550ctets	894278
CRCAlignErrors	0	Pkts256to5110ctets	89984
UndersizePkts	0	Pkts512to10230ctets	34468
OversizePkts	0	Pkts1024to1518Octets	193713
Fragments	0		
MAIN MENU APPLY	Y SAVE		HELP
rush space bar to se	HECL FUFL		

## **Configuration Upload/Download**

This menu allows you to Download and Save a configuration file to a 948TXG Switch or to a host TFTP Server.

To Load a configuration file into the 948TXG (host-to-switch), enter the complete path of the file name (*max 64 characters*) on the host TFTP Server, and hit the [Enter] key. Input the TFTP Server IP Address of the server for your network. (*See your network Administrator*) then hit the [Enter] key. Select Direction (*host-to-switch*) using the [Spacebar] key and then the [Enter] key. When all parameters are correctly entered **Tab** across the menu options and **Apply** hitting the [Enter] key. A new screen will appear with down load status. This may take a while to execute. Reboot the switch after the download has successfully completed for the new configuration to take affect.

To Save a configuration file from the 948TXG (*switch-to-host*), enter the complete image path file name (max 64 characters) on the host TFTP server and hit the [**Enter**] key. The file name given above MUST exist and have write permission. Input the TFTP Server IP Address for your network. (*See your network Administrator*) then hit the [**Enter**] key. To select the Direction (*switch-to-host*) use the [**Spacebar**] key and then the [**Enter**] key When all parameters are correctly entered **Tab** across the menu option and **Apply** hitting the [**Enter**] key. A new screen will appear with download status. This may take a while to execute.

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<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	· v			
Configuration File Upload/Download	MultiSwitch 948TXG			
sysUpTime: 2 Days 00:26:42	L3 - 172.18.1.30			
Image Path: [v <mark>xWorks</mark>	ſ			
TFTP Server IP Address: [0.0.0.0	1			
Direction: <host-to-switch></host-to-switch>				
Load Status: Not Started				
NOTE: On some host systems when doing a 'switch-to-host' transfer, the filename given above MUST exist and have write permission. This is a TFTP security feature. If performing a 'host-to-switch' download, reboot the switch after download has completed for configuration to take affect.				
MAIN MENU APPLY SAVE	HELP			
Enter Path of Configuration File				

### Image File Download

This menu allows you to upgrade the 948TXG switch boot ROM and application images. When upgrading you will lose your settings, so before proceeding make note of your settings currently in use by the 948TXG. (*refer to the 948TXG Firmware Upgrade section of the Release Notes for more information*). It is recommended that before doing an upgrade of the boot ROM and Application ROM images to the 948TXG switch you should save (*backup*) your current system configuration file on your host server. After the upgrade is complete and the switch comes back up you then can reload the system configuration file back to the 948TXG switch.

Enter the complete path of the file name (*max 64 characters*) and hit the **[Enter]** key. Next enter the TFTP Server IP Address and hit the **[Enter]** key. Select the type of image you want to download by using the **[Spacebar]** key. (*Boot Rom should be done first*). Tab across the menu options and Apply the changes hitting the **[Enter]** key.

Repeat the steps above to upgrade the Application ROM.

<b>Telnet - 172.18.2.136</b>	×
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Image File Download	MultiSwitch 948TXG
sysUpTime: 0 Days 17:33:37	L3 - 172.18.2.136
Image Path: [DFE48B03.bin	1
TFTP Server IP Address: [172.18.1.100 ]	
Download Type: <boot rom=""></boot>	
Download Status: Not Started	
MAIN MENU APPLY SAVE	HELP
Apply changes	



*Upgrading the firmware images will cause the configuration to return to MFG's "Factory Defaults".* 

# **Serial Configuration**

This menu allows you to change the baud rate of the front console port only for the 948TXG switch. Refer to Cabling The Console Port on the Module in Chapter 3 of this Installation Guide.

To change the baud rate cycle thru the baud rates using the **[Spacebar]** key, (<2400>, <9600>, <19200>, <38400>) and enter your selection by hitting the **[Enter]** key. Next tab across the menu options and Apply by pressing the **[Enter]** key. The default rate is 9600 baud.

🍠 Telnet - 10.1.192.175	_ 🗆 ×
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Serial Configuration	MultiSwitch 948TX
sysUpTime: 0 Days 18:15:09	L2 - 10.1.192.130
Baud Rate : < 9600 >	
Character Size : 8	
Flow Control : None	
Parity : None	
Stop Bits : 1	
MAIN MENU APPLY SAVE	HELP
Push Space Bar to select Serial Port Baud Rate	



It is recommended the above setting match your host computer and that hardware flow control not be use on your host system.

## Change Password

This menu allows you to change the password to alter the module's configuration. The password you select may have up to *max 16 characters* and is case sensitive.

To enter a new password, TYPE the new password in the NEW PASSWORD field and hit the **[Enter]** key. Retype the password for verification and hit the **[Enter]** key. Tab across the menu option to Apply and hit the **[Enter]** key.

🎜 Telnet - 10.1.192.175	_ 🗆 🗙
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Change Password	MultiSwitch 948TXG
sysUpTime: 0 Days 18:16:27	L2 - 10.1.192.130
New Password: []	
Re-type Password: [ ]	
MAIN MENU APPLY SAVE	HELP
Type in new case sensitive password (up to 16 characters)	
# Using Web Menus To Configure The Module

Using web menus to access the 948TXG module, (*refer to the Release Notes for which browsers are supported*). To access the menus open a Web browser session to the 948TXG using the devices IP address on your network. Example: http://172.18.112.3

Before WEB access is possible, the System Administrator needs to configure the module by Using the Console Port to Configure the Module (see page 4-4) & (see page 4-9) Switch Configuration in this Chapter.

The IP address is either the OBM IP address or the In-Band IP address, depending on which port is connected to the same network as the WEB browser. (*see your system Administrator*).

Once you know the IP address of the 948TXG module, type the address into your browser and hit the **[Enter]** key. A login screen will come up. Type in the USER NAME (*admin*) and hit the **[Enter]** key. The PASSWORD the first time you login in is (*null*). (*See your Administrator if the password has been set*).

Enter Netv	vork Password			? ×
<b>?</b>	Please type yo	ur user name and password.	ß	
Ť	Site:	172.18.1.30		
	Realm	Zephyr		
	<u>U</u> ser Name	I		
	Password			
	$\Box$ Save this pa	ssword in your password list		
		OK	Ca	ncel

The following screen is a Web login.

# WEB Menu Layout

The Following example shows a typical Web menu layout.



The mouse icon will change its shape when you move over the menus different fields for input or selection. To navigate around the menu screens, move the mouse on top of the (+) symbol and click to expand the menu. To edit an input field, move the mouse into the field you want to edit and click. You can now edit that field. To edit a selectable field, move the mouse over the pulldown arrow and click to open the selectable options for your edit.



When using the screen menu options in the menu display, they only apply to that parameter frame. Using Refresh from the windows toolbar may cause unexpected results.

#### **Using Web Main Menu Screen**

This menu allows you to configure the switch from its factory defaults, as well as monitor switch status and performance.

The following WEB menu shows the options available from the modules main menu when the module is operating in a MultiSwitch 900 configuration. Depending on the configuration state of the module, some options may not appear. The WEB menu main screen has options that do not appear in the Telnet CLI session main menu.



Selection	Page
Management Configuration	4-18
Notification (Traps)	4-25
Spanning Tree	4-28
Error Logs	4-31

#### **Using Web Management Configuration**

This menu describes on the following pages the different options under the management configuration. This menu allows you to configure the switch from its factory default settings, as well as monitor switch status and performance.

The following menu shows the options available in the table below from the module when operating in a MultiSwitch 900 configuration. Some options that appear here do not appear in a Telnet CLI session management configuration menus.



Selection	Page
Switch	4-19
System	4-20
Port Parameters	4-21
Port Configuration and Statistics	4-22
Serial	4-23
Password	4-24

#### **Using Web Switch Configuration Menu**

This menu allows you to change the factory defaults of the 948TXG In-Band IP address, Subnet mask, and Default Gateway settings, specific to your Network.

To reset the module without losing any existing settings, move the mouse over the pulldown arrow and click, then using the mouse select the option  $\langle Reset \rangle$ . To reset to factory defaults select  $\langle Reset \rangle$  *Factory Defaults* and then select the **Apply** or **Save** in the menu.



This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

This menu also provides access to information and parameters affecting the function of and/or movement of data through the switch. For example Spanning Tree, BootP and DHCP.

When all parameters are correctly set move the mouse to **Apply** or **Save** and click for your new settings.

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DigitalNetworks.net							
S MultiSwitch 948TXG	Switch Configuration						
Anagement Configuration	IP Address			10.1.192.171	Subnet Mask	255.255.0.0	
Switchi	Default Gateway			10.1.1.1	MAC Address	00:10:64:8e:b5:40	
Ports	Spanning Tree			enable 💌	Traffic Classes	enable 💌	
Port Statistics	BOOTP			disable 💌	DHCP	disable 💌	
Serial	Reset			no reset	<ul> <li>Aging Time</li> </ul>	240	
□     Pessword       ♥     □       ♥     □       ♥     □       Pession     □       ♥     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □       ■     □ <tr< th=""><th></th><th></th><th>Refresh A</th><th>ppply Save</th><th></th><th>, ,</th></tr<>			Refresh A	ppply Save		, ,	
Done						Internet	

#### **Using Web System Configuration Menu**

This menu shows you the System Description, Systems Object ID, Number of Network Interfaces, and System Up Time. The system description tells you the modules name, hardware version and software version you are running. The Number of Network Interfaces tells you how many ports on the module. The system up time tells you how long the module has been active until a reset or a reboot occurs, then System Up Time restarts from zero.

The input fields in this menu, (System Name, System Location, System Contact and Product Name) are for customer information. Examples: System Name:(DIGI)...Where you installed the module. System Location: (Hub 1 - Slot 3)... System Contact: (IT person for you network). The Product Name:.. (Searay)... Changing the Product name from this menu will change the name displayed in a Telnet CLI session menu. The product name displayed in the web menu is fixed and will not change.

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Statute Switch 948TXG	System Configuration						
🖶 🄄 Management Configuration	System Description	MS Switch 948TXG, HtV=1,SW=V1.0.8					
- E Switch	System Object ID	1.3.6.1.4.1.6200.1.1.2					
System	Num Network Interfaces	62					
Ports	System Up Time	4-Days 19-Hours 59-Minutes 11-Seconds					
Port Statistics	System Name	Sample sysName factory default					
Notification (Traps)     Definition (Traps)     Definition (Traps)     Definition (Traps)     Definition (Traps)	System Location	sample sysLocation factory default					
	System Contact	Sample sysContact factory default					
	Product Name	MultiSwitch 948TXG					
		Refresh Apply Save					
🕘 Done		🖉 🖉 İnternet					

When all parameters are correctly set move the mouse over the **Apply** or **Save** and click for your settings.

#### **Using Web Port Parameters Menu**

This menu allows you to display and change port parameter information for each port in the module, as well as monitor all port configuration activity. Select the Port number (1-62) where  $\langle n \rangle$ = the port you wish to change by moving the mouse over the pulldown arrow and selecting a port. Next move the mouse to the State pulldown arrow and set state to **enable** or **disable**. Then move the mouse over the pulldown arrow for Set Speed and select one of the port speeds from the list available or select *auto-negotiate*. Ports (1-48 are front panel 10/100, 49-60 are backplane 10/100, and 61,62 are Gigabit 10/1000).

When all parameters are correctly set move the mouse to **Apply** or **Save** and click for your new settings.

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🖘 <u>MultiSwitch 948TXG</u> 🕂 🔄 Management Configuration	Port Par	ameters				<u>.</u>
Switch	Port: [			Refresh Apply Save		
System     Dorte	Port	State	Link	Set Speed	Actual Speed	STP State
Port Statistics	1	enable 💌	up	autonegotiate 🔻	full-100	blocking
Serial	1	enable	au	autonegotiate	full-100	blocking
Password	2	enable	down	autonegotiate	unknown	disabled
T (In Notification (Trans)	3	enable	down	autonegotiate	unknown	disabled
T Spapping Tree	4	enable	down	autonegotiate	unknown	disabled
Error Loge	5	enable	down	autonegotiate	unknown	disabled
	6	enable	down	autonegotiate	unknown	disabled
	7	enable	down	autonegotiate	unknown	disabled
	8	enable	down	autonegotiate	unknown	disabled
	9	enable	down	autonegotiate	unknown	disabled
	10	enable	down	autonegotiate	unknown	disabled
	11	enable	down	autonegotiate	unknown	disabled
	12	enable	down	autonegotiate	unknown	disabled
	13	enable	down	autonegotiate	unknown	disabled
	14	enable	down	autonegotiate	unknown	disabled
	15	enable	down	autonegotiate	unknown	disabled
	16	enable	down	autonegotiate	unknown	disabled
e) Done						Internet

#### **Using Web Port Configuration and Statistics menu**

This menu allows you to display and change the port parameter information for each port in the module, as well as monitor a select port configuration and statistics. Select the Port number (1-62) where  $\langle n \rangle$ = the port you wish to change by moving the mouse over the pulldown arrow and selecting a port. Next move the mouse to the State pulldown arrow and set state to **enable** or **disable**. Then move the mouse over the pulldown arrow for Set Speed and select one of the port speeds from the list available or select *auto-negotiate*.

When all parameters are correctly set move the mouse to **Apply** or **Save** and click for your new settings.

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DigitalNetworks.net								
MultiSwitch 948JXG	Port Configuration / Statistics	0001						
System	State: enable 🔻	Set Speed:	autonegotiate	-	STP State:	blocking		
Ports	Link: up	Actual Speed:	I Speed: full-100		Type:	fastEther		
- E Serial	RMON (otherState)							
Password	DropEvents	0		Jabbers		0		
🖲 🧰 Notification (Traps)	Octets	136388734		Collision	15	0		
🗈 🧰 Spanning Tree	Pkts	1259097		Pkts64Octets		457370		
🗄 🧰 Error Logs	BroadcastPkts	0	0 Pkts		Pkts65to127Octets			
	MulticastPkts	416520		Pkts128	to255Octets	469858		
	CRCAlignErrors	0		Pkts256to511Octets		44851		
	UndersizePkts	0	0		to1023Octets	0		
	OversizePkts	0		Pkts102	Pkts1024to1518Octets			
	Fragments	0						
			Refresh A	Apply St	ave			
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#### **Using Web Serial Configuration Menu**

This menu allows you to change the baud rate of the front console port only for the 948TXG switch. Refer to Cabling The Console Port on the Module in Chapter 3 of this Installation Guide.

To change the baud rate move the mouse over the pulldown arrow and click to select the new baud rate. Then select Apply or Save for the new settings to take affect.

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MultiSwitch 9487XG	Serial Configuration			1			
Switch		Baud Rate	9600 -				
System		Character Size	8				
- Derts		Ston Bits	1				
Port Statistics		Flow Control	None				
Serial N		Refres	h Apply Save				
Passwald							
🕀 🧰 Notification (Traps)							
🗄 🧰 Spanning Tree							
Error Logs							
e	•			🖉 Internet			

# Using Web Password Menu

This menu allows you to change the password to alter the module's configuration. The password you select may have up to *max 15 characters* and is case sensitive.

To enter a new password, click and TYPE the new password in the NEW PASSWORD field. Click and Retype the password for verification. Then move the mouse over the Apply or Save menu option and click to take affect.

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Digital	works.net
MultiSwitch 948IXG	Password Modification           New Password           Re-Type Password             Apply
<u>ම</u>	II 🔷 Internet

# Using Web Notification (traps) Menu

This menu allows you to manage and modify SNMP-related configuration parameters. The following table lists the topic and page on how to Add, Modify and Delete Target and Notification Parameters.



Selection	Page
Targets	4-26
Notification	4-27

#### Using Web SNMP Targets menu

This menu allows you to Add, Modify and Delete SNMP-related configuration Target Address and Parameters.

To add or modify an SNMP Target Address or Target Parameter, move the mouse over the pulldown arrow and select either new or the entry you want to modify if one exists. Fill in all the input and selectable fields and **Apply** or **Save** your settings.

To delete an entry move the mouse over the pulldown arrow and select the entry and then the **Delete** from the menu options. If there are a lot of entries in your network use the slide bar to find your entry.

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	SNMP Ta	rget Addresses					_	
Masta Switch 9481XG	Entry	Name	Transport Domain	Transport Address	Timeout	Retry Count	Tag List	
Management Configuration	new 💌				0	0		
Notifications	1	nms v1	1.3.6.1.6.1.1	0x00:00:00:00:00:00	1500	3	rfc1493 rfc rfc1907 rfc tmscom	
B D Error Logs	2	nms v2	1.3.6.1.6.1.1	0x00:00:00:00:00:00	1500	3	rfc1493 rfc rfc1907 rfc tmscom	
	3	nms v3	1.3.6.1.6.1.1	0x00:00:00:00:00:00	1500	3	rfc1493 rfc rfc1907 rfc 💌	
SNMP Target Parameters								
	Entry	Name	MP Model	Security Model	Security Name	Security Level	Storage Type	
	new 💌						<b>_</b>	
	1	v1 params	0	1	public	noAuthNoPriv	nonVolatile	
	2	v2 params	3	2	initialnone	noAuthNoPriv	nonvolatile	
			Refrest	Apply Save	Delete	Horadinari	nonvolatile	
	4							
🕘 Done						Internet		

#### Using Web SNMP Notification Tables Menu

This menu allows you to Add, Modify and Delete SNMP-related configuration Notify Tables, Notify Filter Profile Tables and Notify Filter Tables.

To add or modify an SNMP Table, move the mouse over the pulldown arrow and select either new or the entry you want to modify if one exists. Fill in all the input and selectable fields and **Apply** or **Save** your settings.

To delete an entry move the mouse over the pulldown arrow and select the entry and then the **Delete** from the menu options. If there are a lot of entries in your network use the slide bar to find your entry.

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SMultiSwitch 948TXG	SNMP No	tify Table								
Management Configuration	Entry	Name		Tag			Туре	Storage Type	Status	
🖻 😋 Notification (Traps)	new 💌									
Targets	1	bridge		rfc1493			trap	nonVolatile	active	
Notifications	2	interfaces		rfc2233			trap	nonVolatile	active	
🖲 🔄 Spanning Tree 🧟	3	rmon		rfc1757			trap	nonVolatile	active	-
🗄 🧰 Error Logs	SNMP No	tify Filter Profile Ta	ble		C1		Chattan -			-
	Entry	Name			Storage	rype	Status			
	new 💌	<u> </u>								
	1	v1 params			nonVo	latile	active			
	2	v2 parame			nonvo	latilo	active			
	SNMP No	tify Filter Table			101110	iunio.	1 40410	1		-
	Entry	Subtree	ľv	lask			Туре	Storage Type	Status	
	new 💌						•	<b>_</b>		
	1		0	1		- í	included	nonVolatile	active	
	2		0				included	nonVolatile	active	
	3		0				included	nonVolatile	active	-
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# **Using Web Spanning Tree Menu**

This menu allows you to manage and modify Spanning Tree Protocol (STP) configurations for Bridge and Port Parameters. The following table listed below describes the topic and page of STP Bridge and Port Parameters.



Selection	Page
Bridge	4-29
Ports	4-30

#### Using Web Spanning Tree Bridge Parameters Menu

This menu allows you to manage and modify Spanning Tree Protocol (STP) configurations for Bridge Parameters. The menu below describes the STP Bridge Parameters. Not all parameters here are editable in this menu.

STP Designated Root: Indicates the Bridge ID that it believes to be the root bridge. It consists of the root bridge's priority and MAC address.

Priority (0-65535): The Priority parameter is used by the Spanning Tree Protocol (STP) to determine the bridge's priority for becoming the root of a spanning tree. The lower the number the more likely the bridge is to become the root bridge.

Hello Time (100-1000 seconds): Determines the frequency with which the bridge sends out messages on when to become the root bridge.

Forward Delay (400-3000 seconds): Determines how long the bridge stays in the listening/learning state when the bridge becomes the root bridge.

Max Age (600-4000 seconds): Determines the maximum age of STP information learned over the network before it is discarded when the bridge becomes the root bridge.

Aging Time (12-775 seconds): The time-out period for aging out dynamically learned forwarding information.

Use the **Apply** or **Save** from the menu option for your setting to take affect.

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AutiSwitch 948TXG	Spanning Tree Bridge	Parameters			
Management Configuration		S	TP Designated Root	0080 08:00:2B:A4:F1	:00
🖲 🧰 Notification (Traps)		P	riority	32768	
🖻 🔄 Spanning Tree		н	ello Time	200	
		F	prward Delay	1500	
🗄 🧰 Error Logs		м	ax Age	2000	
		R	oot Port	60	
		R	oot Cost	29	
		<u> </u>	Refresh .	Apply Save	

#### Using Web Spanning Tree Port Parameters Menu

This menu allows you to manage and modify Spanning Tree Protocol (STP) configurations for Port Parameters. The following menu describes below the STP Port Parameters. Not all parameters here are editable in this menu.

Bridge Port: The port number of a port on this bridge.

Enable: This parameter enables or disables the STP operation for the port.

Priority (0-255): The priority assigned to this port. The lower the value, the higher the priority.

Fwd Transitions: The number of times this port has transitioned from the Learning State to the Forwarding State.

State: The ports current state as defined by the application of the Spanning Tree Protocol.

To change a port parameter, move the mouse over the pulldown arrow. Select the port and change the parameter. Then select the **Apply** or **Save** from the menu option for your settings to take affect.

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MultiSvatch 9487XG     Management Configuration     Monagement (Configuration     Motification (Traps)     Spanning Tree	Spanning Tree Por	t Parameters	Ref	resh Apply Save		*
Bridge	Bridge Port	Enable	Path Cost	Priority	Fwd Transitions	State
Ports	1	enable 💌	19	128	0	blocking
Error Logs	1	enable	19	128	0	blocking
	2	enable	10	128	0	disabled
	3	enable	10	128	0	disabled
	4	enable	10	128	0	disabled
	5	enable	10	128	0	disabled
	6	enable	10	128	0	disabled
	7	enable	10	128	0	disabled
	8	enable	10	128	0	disabled
	9	enable	10	128	0	disabled
	10	enable	10	128	0	disabled
	11	enable	10	128	0	disabled
	12	enable	10	128	0	disabled
	13	enable	10	128	0	disabled
	14	enable	10	128	0	disabled
	15	enable	10	128	0	disabled
	16	enable	10	128	0	disabled 🗾
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# Using Web Error Logs Menu

This menu allows you to monitor Error Log Parameters. The table listed below describes the type and page of the error logs.



Selection	Page
Diagnostics Error Log	4-32
Systems Error Log	4-33

# Using Web Diagnostic Error Log Menu

This menu reports the Diagnostic errors of the ports on the 948TXG.

Entry: Lists the port number the error occurred on.

Severity: Lists the severity of the error (low, medium, or high).

Description: Lists the description of the error.

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States St	Diagnostic	Error Log						
🗄 🧰 Management Configuration	Entry	Severity	Replaceable Unit (	FRU) Descripti	on			
Notification (Traps)					Refresh			
Error Logs								
Diagnostic Error Log								
System Error Log								
ど Done	•						Internet	1.

# Using Web System Error Log Menu

This menu reports the System errors on the 948TXG.

Entry: Lists the number times an error occurred.

Time Stamp: Lists the Time the error occurred.

Severity: Lists the severity of the error (low, medium, or high).

Description: Lists the description of the error.

Digital Networks MultiSwitch	948TXG - M	licrosoft Inter	net Explor	er 💶 🗆 🗶
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AutoSwitch 9481XG	System Err	or Log		
Management Configuration	Entry	Time Stamp	Severity	Description
Notification (Traps)				
Error Logs	0		Unknown	
Diagnostic Error Log				
System Error Log				Refresh
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# **Chapter 5**

# **Configuring the Module in a DEChub ONE**

# **Overview**

### Introduction

This chapter describes how to configure the module using the DEChub ONE setup screens.

In this chapter certain future functionality is not supported when using a DEChub One with this release. For functionality supported with Version 1.0, refer to the MultiSwitch FE Switch 948TXG Release Notes. For a complete list of future supported functionality, refer to the PDF file called Product Features located on the CD.

The only DEChub One's that can be used with 948TXG are the 90watt versions.

(DEHUA-NB rev A02 & DEF1H-MB rev B01) or higher.

#### In This Chapter

Information in this chapter is organized as follows:

Торіс	Page
Using the Console Port to Configure the Module	5-2
Using Menus to Configure the Module	5-3

Using the Console Port to Configure the Module

# Using the Console Port to Configure the Module

You can access the module's configuration menus by connecting a terminal to the console port, or using Telnet to access the switch over the network.

The console port must be cabled prior to configuration (refer to *Cabling the Console Port on the Module* on page 3-6).

One of the first things that should be done with a newly installed product is to access the Switch Configuration menu and set all the parameters unique to your network. Until the module has been configured with an IP address only management operation via Console port will be effective. Once the module has been assigned an IP address, Telnet sessions and in-band management are possible.

The 948TXG can be configured via several methods listed below:

- Command Line Interface (CLI)
  - Using the front Serial port (Console port)
- Web browser

- Using an Ethernet port (in band management)

#### **Telnet User Access**

You may use a Telnet session to manage the MultiSwitch FE 948TXG directly using in-band management via one of the Ethernet ports.

Direct connection:

When using Telnet to connect to the FE 948TXG management you will need to specify the IP address of the Switch and a password. The default password is **[Null]** so just press the **[Enter]** key at the login prompt to go to the Main Menu.

Web connection:

When using the Web to connect to the FE 948TXG management you will need to specify the IP address of the Switch, User name (*admin*) and a password. The default password is **[Null]** so just press the **[Enter]** key at the login prompt to go to the Main Menu.

#### Menu Layout

Refer to Chapter 4 in this Users Guide for an explanation and description of menus.

#### Menu Option Selection

Refer to Chapter 4 in this Users Guide for an explanation on how to use the menus.

# Using Menus to Configure the Module

These menus allow you to configure the switch from its factory-default settings, as well as to monitor switch status and performance.

The following menu shows the options available from the module INSTALLATION MENU when the module is operating in a DEChub One configuration. Depending on the configuration state of the module, some options may not appear.



Selection	Page
Switch Configuration	5-5
Port Statistics	5-6
Configuration Upload/Download	5-7
Image File Download	5-8
Serial Configuration	5-9
Change Password	5-10



Periodically, upgrades to the firmware are released. If you need to upgrade the firmware of an existing module, use the Downline Upgrade procedures provided in the *MultiSwitch Fast Ethernet 948TXG Release Notes*.

# **Switch Configuration**

This menu allows you to change the factory defaults of the FE 948TXG In-Band & Out of Band IP address, Subnet mask, and Default Gateway settings, specific to your Network.

To reset the module without losing any existing settings, tab down to, [Reset] and cycle thru the options using the spacebar selecting <Reset>. To reset to factory defaults select <Reset Factory Defaults>.



This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

This menu also provides public and private access to information and parameters affecting the function of and/or movement of packets through the switch; for example: Spanning Tree, BootP, and DHCP.

SNMP: Read-only & Read-Write access name to the device. (1-20 character range max) default name shown.

When all parameters are correct Tab down to menu option and select **Apply** or **Save** for your settings.

🚅 Telnet - 10.1.192.175	
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Switch Configuration	MultiSwitch 948TXG
sysUpTime: 0 Days 18:11:40	L2 - 10.1.192.130
In Band : IP Address : [ <mark>10.1</mark>	.192.130 ]
Subnet Mask : [255.2	255.0.0 ]
Default Gateway : [10.1	.1.1 ]
Out of Band : IP Address : [10.1	.192.135 ]
Subnet Mask : [255.2	255.0.0 ]
Default Gateway : [10.1	.1.1 ]
MAC Address : 00:10	0:64:8D:9E:80
SNMP RO Community : [publi	ic ]
SNMP RW Community : [priva	ate ]
Spanning Tree : <enabl< th=""><th>le &gt;</th></enabl<>	le >
BOOTP : <disat< td=""><td>ble&gt;</td></disat<>	ble>
DHCP : <disat< td=""><td>ble&gt;</td></disat<>	ble>
Reset : <no re<="" th=""><th>eset &gt;</th></no>	eset >
MAIN MENU APPLY SAUE	HELP
Enter Agent IP Address in decimal dot format (e.c	9., 209.131.209.13)

#### **Port Statistics**

This menu allows you to display and change information for each port in the module, as well as monitor its configuration activity. Select the **Port** number (1-62) where  $\langle n \rangle =$  the port you wish to change using the **[Spacebar]** key. Tab down to **State** to  $\langle Enable \rangle$  or  $\langle Disable \rangle$  the port with the **[Spacebar]** key. Then Tab over to **Set Speed** and select one of the following:  $\langle Half-10 \rangle$ ,  $\langle Full-10 \rangle$ ,  $\langle Full-100 \rangle$ , or  $\langle Auto-negotiate \rangle$  with the **[Spacebar]** key. When all parameters are correct Tab down to the menu option and select **Apply** or **Save** for your settings.



Do not use this menu to change the backplane ports (49-60). You must use the clearvisn software to update the port configuration.

The following shows the CLI screen associated with this option.

🚚 Telnet - 172.18.1.30		N	_ 🗆 X
<u>Connect</u> <u>E</u> dit <u>T</u> ermina	al <u>H</u> elp	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Port Statistics			MultiSwitch 948TXG
sysUpTime: 1 Days (	94:52:00	L	3 - 172.18.1.30
Port: < 🚺 > ifInde>	K: 0x02100001		
State: <enable> Link: Up</enable>	> Set Speed: Actual Speed:	<autonegotiate> STP Stat full-100</autonegotiate>	te: Forwarding
RMON (etherStats);	:		
DropEvents	0	Jabbers	0
Octets	542986681	Collisions	0
Pkts	2106917	Pkt640ctets	538107
Broadcasts	207102	Pkts65to1270ctets	356367
Multicasts	894888	Pkts128to2550ctets	894278
CRCAlignErrors	0	Pkts256to5110ctets	89984
UndersizePkts	0	Pkts512to10230ctets	34468
OversizePkts	0	Pkts1024to1518Octets	193713
Fragments	0		
MAIN MENU APPLY	Y SAVE		HELP
Push Space Bar to se	elect Port		

### **Configuration Upload/Download**

This menu allows you to Download and Save a configuration file to a 948TXG Switch or to a host TFTP Server.

To Load a configuration file into the 948TXG (host-to-switch), enter the complete path of the file name (*max 64 characters*) on the host TFTP Server, and hit the [Enter] key. Input the TFTP Server IP Address of the server for your network. (*See your network Administrator*) then hit the [Enter] key. Select Direction (*host-to-switch*) using the [Spacebar] key and then the [Enter] key. When all parameters are correctly entered **Tab** across the menu options and **Apply** hitting the [Enter] key. A new screen will appear with download status. This may take a while to execute. Reboot the switch after the download has successfully completed for the new configuration to take affect.

To Save a configuration file from the 948TXG (*switch-to-host*), enter the complete image path file name (max 64 characters) on the host TFTP server and hit the [**Enter**] key. The file name given above MUST exist and have write permission. Input the TFTP Server IP Address for your network. (*See your network Administrator*) then hit the [**Enter**] key. To select the Direction (*switch-to-host*) use the [**Spacebar**] key and then the [**Enter**] key When all parameters are correctly entered **Tab** across the menu option and **Apply** hitting the [**Enter**] key. A new screen will appear with download status. This may take a while to execute.

🚚 Telnet - 172.18.1.30	
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Configuration File Upload/Download	MultiSwitch 948TXG
sysUpTime: 2 Days 00:26:42	L3 - 172.18.1.30
Image Path: [v <mark>xWorks</mark>	
TFTP Server IP Address: [0.0.0.0	1
Direction: <host-to-switch></host-to-switch>	
Load Status: Not Started	
NOTE: On some host systems when doing a the filename given above MUST exi This is a TFTP security feature. If performing a 'host-to-switch' after download has completed for	'switch-to-host' transfer, st and have write permission. download, reboot the switch configuration to take affect.
MAIN MENU APPLY SAVE	HELP
Enter Path of Configuration File	

#### Image File Download

This menu allows you to upgrade the 948TXG switch boot ROM and application images. When upgrading you will lose your settings, so before proceeding make note of your settings currently in use by the 948TXG. (*refer to the 948TXG Firmware Upgrade section of the Release Notes for more information*). It is recommended that before doing an upgrade of the boot ROM and Application ROM images to the 948TXG switch you should save (*backup*) your current system configuration file on your host server. After the upgrade is complete and the switch comes back up you then can reload the system configuration file back to the 948TXG switch.

Enter the complete path of the file name (*max 64 characters*) and hit the **[Enter]** key. Next enter the TFTP Server IP Address and hit the **[Enter]** key. Select the type of image you want to download by using the **[Spacebar]** key. (*Boot Rom should be done first*). Tab across the menu options and **Apply** the changes hitting the **[Enter]** key.

Repeat the steps above to upgrade the Application ROM.

<b>Telnet - 172.18.2.136</b>	
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Image File Download	MultiSwitch 948TXG
sysUpTime: 0 Days 17:33:37	L3 - 172.18.2.136
Image Path: [DFE48B03.bin	1
TFTP Server IP Address: [172.18.1.100 ]	
Download Type: <boot rom=""></boot>	
Download Status: Not Started	
MAIN MENU APPLY SAVE	HELP
Apply changes	



Upgrading the firmware images will cause the configuration to return to factory defaults.

# **Serial Configuration**

This menu allows you to change the baud rate of the front console port only for the 948TXG switch. Refer to Cabling The Console Port on the Module in Chapter 3 of this Installation Guide.

To change the baud rate cycle thru the baud rates using the **[Spacebar]** key, (<2400>, <9600>, <19200>, <38400>) and enter your selection by hitting the **[Enter]** key. Next tab across the menu options and **Apply** by pressing the **[Enter]** key. The default rate is 9600 baud.

🚅 Telnet - 10.1.192.175	_ 🗆 X
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Serial Configuration MultiSe	itch 948TXG
sysUpTime: 0 Days 18:15:09 L2 - 10.1	.192.130
Baud Rate : < 9600 >	
Character Size : 8	
Flow Control : None	
Parity : None	
Stop Bits : 1	
MAIN MENU APPLY SAVE	HELP
Push Space Bar to select Serial Port Baud Rate	



It is recommended the these setting match your host computer and that hardware flow control not be use on your host system.

### Change Password

This menu allows you to change the password to alter the module's configuration. The password you select may have up to (*max 16 characters*) and is case sensitive.

To enter a new password, TYPE the new password in the NEW PASSWORD field and hit the **[Enter]** key. Retype the password for verification and hit the **[Enter]** key. Tab across the menu option to **Apply** and hit the **[Enter]** key.

🚅 Telnet - 10.1.192.175	_ 🗆 🗙
<u>C</u> onnect <u>E</u> dit <u>T</u> erminal <u>H</u> elp	
Change Password	MultiSwitch 948TXG
sysUpTime: 0 Days 18:16:27	L2 - 10.1.192.130
New Password: []	
Re-type Password: [ ]	
MAIN MENU APPLY SAVE	HELP
Type in new case sensitive password (up to 16 characters)	

# Using Web Menus To Configure The Module

Using web menus to access the 948TXG module, (*refer to the Release Notes for which browsers are supported*). To access the menus open a Web browser session to the 948TXG using the devices IP address on your network. Example: http://172.18.112.3

Before WEB access is possible, the System Administrator needs to configure the module by Using the Console Port to Configure the Module (see page 5-2) & (see page 5-5) Switch Configuration in this Chapter.

The IP address is either the OBM IP address or the In-Band IP address, depending on which port is connected to the same network as the WEB browser. (*see your system Administrator*).

Once you know the IP address of the 948TXG module, type the address into your browser and hit the **[Enter]** key. A login screen will come up. Type in the USER NAME (*admin*) and hit the **[Enter]** key. The PASSWORD the first time you login in is (*null*). (*See your Administrator if the password has been set*).

Enter Netw	ork Password			? ×	
<b>?</b> >	Please type yo	ur user name and password.	R		
Ň	Site:	172.18.1.30			
	Realm	Zephyr			
	<u>U</u> ser Name				
	<u>P</u> assword				
$\Box$ Save this password in your password list					
		OK		Cancel	

The following screen is A Web login.

#### WEB Menu Layout

Refer to Chapter 4 in this Users Guide for an explanation and description of menus.

#### Using Web Main Menu Screen

This menu allows you to configure the switch from its factory-defaults, as well as monitor switch status and performance.

The following WEB menu shows the options available from the modules main menu when the module is operating in a DEChub One configuration. Depending on the configuration state of the module, some options may not appear. The WEB menu main screen has options that do not appear in the Telnet CLI session main menu.



Selection	Page
Using Web Management Configuration	5-13
Notification (Traps)	5-20
Spanning Tree	5-23
Error Logs	5-26

### **Using Web Management Configuration**

This menu describes on the following pages, the different options under the management configuration. This menu allows you to configure the switch from its factory-default settings, as well as monitor switch status and performance.

The following menu shows the options available in the table below from the module when operating in a DEChub One configuration. Some options that appear here do not appear in a Telnet CLI session management configuration menus.



Selection	Page
Switch	5-14
System	5-15
Port Parameters	5-16
Port Configuration and Statistics	5-17
Serial	5-18
Password	5-19

### **Using Web Switch Configuration Menu**

This menu allows you to change the factory defaults of the 948TXG In-Band IP address, Subnet mask, and Default Gateway settings, specific to your Network.

To reset the module without losing any existing settings, move the mouse over the pulldown arrow and click, then using the mouse select the option  $\langle Reset \rangle$ . To reset to factory defaults select  $\langle Reset \rangle$  *Factory Defaults* and then select the Apply or Save in the menu.



This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

This menu also provides access to information and parameters affecting the function of and/or movement of data through the switch; for example: Spanning Tree, BootP and DHCP.

When all parameters are correctly set move the mouse to **Apply** or **Save** and click for your new settings.

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Address 🛃 http://10.1.192.171						▼ 🖉 Go Links »
DigitalNetw	vorks" networks.net					10.1.192.171
SMultiSwitch 948TXG	Switch Configuration					
🖻 🔁 Management Configuration	IP Address			10.1.192.171	Subnet Mask	255.255.0.0
Switch	Default Gateway			10.1.1.1	MAC Address	00:10:64:8e:b5:40
Ports	Spanning Tree			enable 💌	Traffic Classes	enable 💌
Port Statistics	BOOTP			disable 💌	DHCP	disable 💌
Serial	Reset			no reset	Aging Time	240
Ioonnoor (Traps)     Spanning Tree     Tre     Error Logs			Refresh	ppty Save		
🕘 Done						Internet

#### **Using Web System Configuration Menu**

This menu shows you the System Description, Systems Object ID, Number of Network Interfaces, and System Up Time. The system description tells you the modules name, hardware version and software version you are running. The Number of Network Interfaces tells you how many ports on the module. The system up time tells you how long the module has been active, until a reset or a reboot occurs, then System Up Time restarts from zero.

The input fields in this menu, (System Name, System Location, System Contact and Product Name) are for customer information. Examples: System Name:(DIGI)..Where you installed the module. System Location: (Hub 1 - Slot 3)... System Contact: (IT person for you network). The Product Name:.. (Searay).. Changing the Product name from this menu will change the name displayed in a Telnet CLI session menu. The product name displayed in the web menu is fixed and will not change.

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Address 🛃 http://10.1.192.171		💌 🔗 Go Links
Digital	works"	
SMultiSwitch 948TXG	System Configuration	
🖶 🄄 Management Configuration	System Description	MS Switch 948TXG, HW=1, SW=V1.0.8
- B Switch	System Object ID	1.3.6.1.4.1.6200.1.1.2
- Distant	Num Network Interfaces	62
Ports	System Up Time	4-Days 19-Hours 59-Minutes 11-Seconds
Port Statistics     Serial     Password	System Name	sample sysName factory default
Notification (Traps)     Definition (Traps)     Definition (Traps)     Definition (Traps)	System Location	sample sysLocation factory default
	System Contact	sample sysContact factory default
	Product Name	NultiSwitch 948TXG
		Refresh Apply Save
🕘 Done		📄 📄 🔮 Internet

When all parameters are correctly set move the mouse over the **Apply** or **Save** and click for your settings.

#### **Using Web Port Parameters Menu**

This menu allows you to display and change port parameter information for each port in the module, as well as monitor all port configuration activity. Select the Port number (1-62) where  $\langle n \rangle$ = the port you wish to change by moving the mouse over the pulldown arrow and selecting a port. Next move the mouse to the State pulldown arrow and set state to **enable** or **disable**. Then move the mouse over the pulldown arrow for Set Speed and select one of the port speeds from the list available or select *auto-negotiate*. Ports (1-48 are front panel 10/100, 49-60 are backplane 10/100, and 61,62 are Gigabit 10/1000).

The backplane ports for the 948TXG will not work when used with a DEChub One. For backplane functionality install the 948TXG in a MultiSwitch 900.

When all parameters are correctly set move the mouse to **Apply** or **Save** and click for your new settings.

Digital Networks MultiSwitc	h 948TXG	- Microsoft Internet E	xplorer	N		- 🗆 ×
<u>File Edit View Fa</u> vorites j	<u>T</u> ools <u>H</u> e	lp		-7		198 198
↔ → → ⊗ Back Forward Stop	(† Refrest		Favorites H	る 「 こ ま の し 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、	↓ →	
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DigitaNety	WOr	ks.net				10.1.192.171
MultiSwitch 9487XG	Port Par Port: 1	rameters				-
- E System		-		Refresh Apply Save		
Ports	Port	State	Link	Set Speed	Actual Speed	STP State
Port Statistics	1	enable 💌	up	autonegotiate 💌	full-100	blocking
- E Serial	1	enable	up	autonegotiate	full-100	blocking
Password	2	enable	down	autonegotiate	unknown	disabled
🖻 🧰 Notification (Traps)	3	enable	down	autonegotiate	unknown	disabled
🖭 🧰 Spanning Tree	4	enable	down	autonegotiate	unknown	disabled
🗄 🧰 Error Logs	5	enable	down	autonegotiate	unknown	disabled
	6	enable	down	autonegotiate	unknown	disabled
	7	enable	down	autonegotiate	unknown	disabled
	8	enable	down	autonegotiate	unknown	disabled
	9	enable	down	autonegotiate	unknown	disabled
	10	enable	down	autonegotiate	unknown	disabled
	11	enable	down	autonegotiate	unknown	disabled
	12	enable	down	autonegotiate	unknown	disabled
	13	enable	down	autonegotiate	unknown	disabled
1	14	enable	down	autonegotiate	unknown	disabled
1	15	enable	down	autonegotiate	unknown	disabled
	16	enable	down	autonegotiate	unknown	disabled
Done						Internet
#### **Using Web Port Configuration and Statistics Menu**

This menu allows you to display and change the port parameter information for each port in the module, as well as monitor a select port configuration and statistics. Select the Port number (1-62) where  $\langle n \rangle$ = the port you wish to change by moving the mouse over the pulldown arrow and selecting a port. Next move the mouse to the State pulldown arrow and set state to **enable** or **disable**. Then move the mouse over the pulldown arrow for Set Speed and select one of the port speeds from the list available or select *auto-negotiate*.

The backplane ports for the 948TXG will not work when used with a DEChub One. For backplane functionality install the 948TXG in a MultiSwitch 900.

When all parameters are correctly set move the mouse to **Apply** or **Save** and click for your new settings.

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	BroadcastPikts	418620		PRISoSIUT 27 OCIEIS	287016
	CRCAlignErrors	410320		Pkts256to511Octets	44851
	UndersizePkts	0		Pkts512to1023Octets	0
	OversizePkts	0		Pkts1024to1518Octets	2
	Fragments	0			
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e Done	1				S Internet

### **Using Web Serial Configuration Menu**

This menu allows you to change the baud rate of the front console port only for the 948TXG switch. Refer to Cabling The Console Port on the Module in Chapter 3 of this Installation Guide.

To change the baud rate move the mouse over the pulldown arrow and click to select the new baud rate. Then select **Apply** or **Save** for the new settings to take affect.

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System		Parity	None	-
Ports		Stop Bits	1	
Port Statistics		Flow Control	None	
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### Using Web Password Menu

This menu allows you to change the password to alter the module's configuration. The password you select may have up to *max 15 characters* and is case sensitive.

To enter a new password, click and TYPE the new password in the NEW PASSWORD field. Click and Retype the password for verification, then move the mouse over the **Apply** or **Save** menu option and click to take affect.

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### Using Web Notification (traps) Menu

This menu allows you to manage and modify SNMP-related configuration parameters. The following table lists the topic and page on how to Add, Modify and Delete Target and Notification Parameters.



Selection	Page
Targets	5-21
Notification	5-22

### Using Web SNMP Targets Menu

This menu allows you to Add, Modify and Delete SNMP-related configuration Target Address and Parameters.

To add or modify an SNMP Target Address or Target Parameter, move the mouse over the pulldown arrow and select either new or the entry you want to modify if one exists. Fill in all the input and selectable fields and **Apply** or **Save** your settings.

To delete an entry move the mouse over the pulldown arrow and select the entry and then the **Delete** from the menu options. If there are a lot of entries in your network use the slide bar to find your entry.

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Error Logs	2	nms v2	1.3.6.1.6.1.1	0x00:00:00:00:00:00	1500	3	rfc1493 rfc rfc1907 rfc tmscom
	3	nms v3	1.3.6.1.6.1.1	0x00:00:00:00:00:00	1500	3	rfc1493 rfc rfc1907 rfc 💌
	SNMP Ta	rget Parameters					_
	Entry	Name	MP Model	Security Model	Security Name	Security Level	Storage Type
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### **Using Web SNMP Notification Tables Menu**

This menu allows you to Add, Modify and Delete SNMP-related configuration Notify Tables, Notify Filter Profile Tables and Notify Filter Tables.

To add or modify an SNMP Table, move the mouse over the pulldown arrow and select either new or the entry you want to modify if one exists. Fill in all the input and selectable fields and Apply or Save your settings.

To delete an entry move the mouse over the pulldown arrow and select the entry and then the Delete from the menu options. If there are a lot of entries in your network use the slide bar to find your entry.

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🗉 🧰 Management Configuration	Entry	Name	Tag		Туре	Storage Type	Status
🖻 🚘 Notification (Traps)	new 💌						
Targets	1	bridge	rfc149	3	trap	nonVolatile	active
Notifications	2	interfaces	rfc223	3	trap	nonVolatile	active
Spanning Tree	3	rmon	rfc175	7	trap	nonVolatile	active
Error Logs	SNMP No	tify Filter Profile Tal	ble				
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	2	v2 params		nonvolatile	active		_
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### **Using Web Spanning Tree Menu**

This menu allows you to manage and modify Spanning Tree Protocol (STP) configurations for Bridge and Port Parameters. The following table listed below describes the topic and page of STP Bridge and Port Parameters.



Selection	Page
Bridge	5-24
Ports	5-25

#### Using Web Spanning Tree Bridge Parameters Menu

This menu allows you to manage and modify Spanning Tree Protocol (STP) configurations for Bridge Parameters. The menu describes below the STP Bridge Parameters. Not all parameters here are editable in this menu.

STP Designated Root: Indicates the Bridge ID that it believes to be the root bridge. It consists of the root bridge's priority and MAC address.

Priority (0-65535): The Priority parameter is used by the Spanning Tree Protocol (STP) to determine the bridge's priority for becoming the root of a spanning tree. The lower the number the more likely the bridge is to become the root bridge.

Hello Time (100-1000 seconds): Determines the frequency with which the bridge sends out messages on when to become the root bridge.

Forward Delay (400-3000 seconds): Determines how long the bridge stays in the listening/learning state when the bridge becomes the root bridge.

Max Age (600-4000 seconds): Determines the maximum age of STP information learned over the network before it is discarded when the bridge becomes the root bridge.

Aging Time (12-775 seconds): The time-out period for aging out dynamically learned forwarding information.

Use the **Apply** or **Save** from the menu option for your setting to take affect.

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		F	prward Delay	1500	
🗄 🧰 Error Logs		м	ax Age	2000	
		R	oot Port	60	
		R	oot Cost	29	
		<u> Te</u>	opology Changes	8	
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### **Using Web Spanning Tree Port Parameters Menu**

This menu allows you to manage and modify Spanning Tree Protocol (STP) configurations for Port Parameters. The following menu describes below the STP Port Parameters. Not all parameters here are editable in this menu.

Bridge Port: The port number of a port on this bridge.

Enable: This parameter enables or disables the STP operation for the port.

Priority (0-255): The priority assigned to this port. The lower the value, the higher the priority.

Fwd Transitions: The number of times this port has transitioned from the Learning State to the Forwarding State.

State: The ports current state as defined by the application of the Spanning Tree Protocol.

To change a port parameter, move the mouse over the pulldown arrow. Select the port and change the parameter. Then select the **Apply** or **Save** from the menu option for your settings to take affect.

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Bridge	Bridge Port	Enable	Path Cost	Priority	Fwd Transitions	State				
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Error Logs	1	enable	19	128	0	blocking				
	2	enable	10	128	0	disabled				
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	4	enable	10	128	0	disabled				
	5	enable	10	128	0	disabled				
	6	enable	10	128	0	disabled				
	7	enable	10	128	0	disabled				
	8	enable	10	128	0	disabled				
	9	enable	10	128	0	disabled				
	10	enable	10	128	0	disabled				
	11	enable	10	128	0	disabled				
	12	enable	10	128	0	disabled				
	13	enable	10	128	0	disabled				
	14	enable	10	128	0	disabled				
	15	enable	10	128	0	disabled				
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### Using Web Error Logs Menu

This menu allows you to monitor Error Log Parameters. The table listed below describes the type and page of the error logs.



Selection	Page
Diagnostics Error Log	5-27
Systems Error Log	5-28

### Using Web Diagnostic Error Log Menu

This menu reports the Diagnostic errors of the ports on the 948TXG.

Entry: Lists the port number the error occurred on.

Severity: Lists the severity of the error (low, medium, or high).

Description: Lists the description of the error.

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Notification (Traps)				Refr	esh			
Error Logs								
Diagnostic Error Log								
System Error Log								
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### Using Web System Error Log Menu

This menu reports the System errors on the 948TXG.

Entry: Lists the number times an error occurred.

Time Stamp: Lists the Time the error occurred.

Severity: Lists the severity of the error (low, medium, or high).

Description: Lists the description of the error.

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Management Configuration	Entry	Time Stamp	Severity	Description			
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Diagnostic Error Log					_		
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# **Chapter 6**

# **Console Firmware Upgrade**

## **Overview**

### Introduction

This chapter describes how to load the latest firmware into your module.

### In This Chapter

Information in this chapter is organized as follows:

Торіс	Page
About Console Firmware Upgrade	6-2
Upgrade Procedure	6-3

About Console Firmware Upgrade

# About Console Firmware Upgrade

The console firmware upgrade consists of the following six processes:

- Power-on module
- Accessing help
- Displaying device characteristics
- Changing device characteristics
- Downloading an image
- Updating FLASH RAM

# **Upgrade Procedure**

Step	Action
1	Ensure that there is a terminal/hyperterminal connection to a physical console.

2 Ensure that your module console port is cabled using a BN24Y cable as shown below:



**3** Power on the module.

**4** The following screens appears:

```
MultiSwitch FE948TXG System Boot
Copyright 2001 Digital Networks, DNPG LLC.
CPU: IBM Powerup 405GP Rev. D
VxWorks: 5.4
BSP version: 1.2/4
Creation date: Oct 29 2001, 11:51:52
Press any key to stop auto-boot...
```

Step	Action			
	To display the following help commands, at the prompt [FE948TXG Boot]: prompt, press the $\mathbf{h}$ key			
	<pre>? - print this list @ - boot (load and go) p - print boot parameters c - change boot parameters l - load boot file % - loads a image from RAM to FLASH RAM g adrs - go to address d adrs[,n] - display memory m adrs - modify memory f adrs, nbytes, value - fill memory t adrs, adrs, nbytes - copy memory e - print fatal exception n netif - print network interface device address \$dev(0,procnum)host:/file h=# e=# b=# g=# u=usr [pw=passwd] f=# tn=targetname s=script o=other Boot flags: 0x02 - load local system symbols 0x04 - don't autoboot 0x08 - quick autoboot (no countdown) 0x20 - disable login security 0x40 - use bootp to get boot parameters 0x80 - use tftp to get boot parameters 0x80 - use tftp to get boot image</pre>			
	available boot devices:Enhanced Network Devices ibmEmac0			
5	To display configuration settings, enter $\mathbf{p}$ at the following prompt:			
	[FE948TXG Boot]: p			

boot device : ibmEmac unit number : 0 processor number : 0 host name : file name : inet on ethernet (e) : host inet (h) : gateway inet (g) : user (u) : ftp password (pw) : flags (f) : 0x82 target name (tn) :

Step	Action
6	To modify configuration settings, enter $\mathbf{c}$ at the following prompt:
	[FE948TXG Boot]: c



You must set **Other** in the following configuration settings to **FLASH.** It is suggested that the boot device, filename, Internet characteristics, flags, and filename to be configured.

```
'.'= clear field;'-'= go to previous field;^D = quit
boot device : ibmEmac0
processor number : 0
host name :
file name :
inet on ethernet (e) :
inet on backplane (b):
host inet (h) :
gateway inet (g) :
user (u) :
ftp password (pw) (blank = use rsh):
flags (f) : 0x82
target name (tn) :
startup script (s) :
other (o) :
```

7

To load the software, enter **l** at the following prompt:

[FE948TXG Boot]: 1

```
boot device : ibmEmac
unit number : 0
processor number : 0
host name : mech24
file name : vxworks
inet on ethernet (e) : 172.18.112.1
host inet (h) : 172.18.50.69
gateway inet (g) : 172.18.1.1
user (u) : searay
ftp password (pw) : searay
flags (f) : 0x82
target name (tn) : searay
```

Step	Action			
	The system displays the following messages:			
	Attached TCP/IP interface to ibmEmac0. Attaching network interface lo0 done. Loading 902492 entry = 0x10000			
8	To update RAM to Flash RAM, enter% at the following prompt:			
	[FE948TXG Boot]:%			
	<pre>FLASH RAM update in progress, please be patient.  Erasing FLASH RAM.  Writing FLASH RAM.  FLASH RAM update successful.</pre>			
9	Change the " <b>Other</b> " parameter in the configuration screen back to the default mode "." If there is a problem with the image in flash, the system will continue to boot from flash but will not be able to boot successfully.			
10	Power the module <b>Off</b> and back <b>On</b> .			

# Appendix A

# **Problem Solving**

# **Overview**

### Introduction

This appendix describes the LED states and troubleshooting information for the modules.

For detailed information about the GBIC Ethernet Port Status LED, port activity LEDs, and modular media interface LEDs, refer to Chapter 1.

## In This Appendix

Торіс	Page
LED States	A-2
Problem Solving Using the LEDs	A-4

### **LED States**

Table A-1 describes the states indicated by the module's LEDs.





LED States

LED(s)	Off	Green On	Green Blinking	Yellow On or Blinking
4. If 10/100 Mbps Mode is active <b># FDX</b> <b>POOP</b> 100	Port is operating at 10 Mbps	Port is operating at 100 Mbps	N/A	N/A
5. Port Activity Mode LED <b># FDX</b> <b>000</b> 100	Indicates no network traffic	Indicates a steady amount of network traffic	Indicates a lower amount of network traffic	N/A
GBIC Ethernet Port Activity LED ● ● # →	Indicates no activity	Indicates port activity	N/A	N/A
GBIC Ethernet Port Status LED ● O + →	Indicates No Connection	Indicates Active Connection	Indicates disabled by management	N/A

Problem Solving Using the LEDs

# **Problem Solving Using the LEDs**

A problem is often indicated by the combined states of the module's LEDs. **Table A-2** lists the states of the LEDs for various error conditions, the probable causes, and the corrective action to be taken.

Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
Power LED is off.	Inadequate power - The module is not	Check the power status on the module or MultiSwitch 900.
$\bigotimes$	receiving 3.3Vdc or +5Vdc.	If the MultiSwitch 900 or MultiSwitch 900-4 indicates that power is available for this module, lift the release lever and reseat or remove the module and try a new slot. If power is not available from the MultiSwitch 900 add a power supply if slot is available. If above options fail return dead unit for repair.
Module OK LED is	The module Self-test	Wait for self-test to complete.
off.	in progress. Self-test failed.	If the LED does not light within 60 seconds disconnect the module and plug it in again.
		If self-test fails again, replace the module. If the problem persists, contact your service representative to correct the problem.
The Port State mode LED is lit	1. Connection is bad (loose or incorrect cable).	Correct the cable connection.
# FDX <b>••••••</b> <b>••••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>•••</b> <b>••</b> <b>•••</b> <b>•</b> <b>••</b> <b>••</b> <b>••</b> <b>•••</b> <b>••••••</b> <b>•••••••••••••</b>	2. Port not connected.	None — normal operation.
and the Port Status		

 Table A-2:
 Typical Combined States of LEDs

LED is off.



### Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
The Port State mode LED is lit # FDX	Port is disabled (for instance, by management, security, or is isolated).	None — normal operation.
and the Port Status LED is blinking.	Port may also be in a spanning tree mode: listening, learning, or blocking.	
	U	
None of the Port Status mode LEDs is lit and the Port Status LED is blinking.	Traffic sensed on network connected to port.	None — normal operation.
None of the Port Status mode LEDs is lit and the Port Status LED is off.	No traffic sensed.	None.

# **Appendix B**

# **Connectors, Pin Assignments, and Cables**

# **Overview**

This appendix shows the pin assignments of the connectors, cables, and adapters that are part of, or can be used with the MultiSwitch FE Switch 948TXG, and the MultiSwitch 900.

For instructions on how to install and remove cables refer to Chapter 3.

Cable ordering information is listed in the Preface.

This appendix is organized as follows:

Торіс	Page
Connectors	B-2
Cable Pin Assignments	<b>B-4</b>
Adapters	B-6
Internal and External Crossover Configurations	B-8
Ordering Cables	B-9

Connectors

## Connectors

### **Console Port (RJ-45) Connections**

The console port is used to set up the module. The console port connector contains two interfaces:

- RS-232 serial port used to configure 948TXG parameters
- 10/100 Ethernet port used for downline upgrade firmware

Figure B-1 shows the console port connector and the following table defines the RJ-45 connector pin assignments.

#### Figure B-1: Console Port (RJ-45) Connector



NPB-8719-95F

Pin No.	Assignment	RS-232	Ethernet
1	GND	signal GND (serial port)	-
2	RXD	RXD (serial port)	-
3	GND	signal GND (serial port)	-
4	CTS	-	RX- (Ethernet port)
5	RTS	-	RX+ (Ethernet port)
6	TXD	TXD (serial port)	-
7	DTR	-	TX+ (Ethernet port)
8	DSR	-	TX- (Ethernet port)

Note: RS232 port is available on port "A" of the "Y" cable.

Ethernet is available on port "B" of the "Y" cable.

Connectors

### 10/100BASE-TX Ethernet Connections

Two 10/100 TX Ethernet ports are implemented on one RJ-45 connector, using a crossover scheme (so that a straight-through cable can be used to connect to an end station) as shown in **Figure B-2**. The following table defines the RJ-45 connector pin assignments for this option only.

### Figure B-2: 10/100BASE-TX (RJ-45) Crossover Connector



DN\_000018\_01.f

Pin No.	Port A	Port B
1	Port A RX+	-
2	Port A RX-	-
3	Port A TX+	-
4	-	Port B TX-
5	-	Port B TX+
6	Port A TX-	-
7	-	Port B RX+
8	-	Port B RX-

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NOTE	
	ļ

Using a BN24Y-xx cable allows two Ethernet connections for connector.

Cable Pin Assignments

# **Cable Pin Assignments**

### **BN24Q Cable**

**Figure B-3** shows the BN24Q cable used with the MultiSwitch 900-4. This cable can be used but it only connects Port A of the two ports available at the RJ-45 connector.

### Figure B-3: BN24Q Cable Pin Assignment



Cable Pin Assignments

### **BN24H Cable**

**Figure B-4** shows the BN24H cable used with the MultiSwitch 900-4. The following table defines the BN24H cable connector pin assignments.

### Figure B-4: BN24H Cable Pin Assignments



Adapters

## **Adapters**

The following adapters can be used with the MultiSwitch 900 or a device such as a PC or terminal.

### H8585-AA Adapter

**Figure B-6** shows the H8585-AA adapter (8-pin MP to 9-pin D-Sub connector) can be used when connecting to the OBM port on the MultiSwitch 900.

Figure B-5: H8585-AA Adapter



Adapters

### H8571-J Adapter

**Figure B-6** shows the H8571-J adapter (6-pin MMJ to 9-pin D-Sub connector) can be used when connecting to the OBM port on the MultiSwitch 900.

#### Figure B-6: H8571-J Adapter



### H8575-A Adapter

Figure B-7 shows the H8575-A adapter (6-pin MMJ connector to 25-pin D-Sub connector) and its pin assignments.

#### Figure B-7: H8575-A Adapter



Internal and External Crossover Configurations

## Internal and External Crossover Configurations

A crossover function must be implemented in every twisted-pair link. The crossover function (internal or external) allows the transmitter of one device to connect to the receiver of the device at the other end of the twisted-pair link.

**Figure B-8** shows the following types of devices: (1) straight-through, (2) crossover cables (3) connecting straight-through (4) crossover. The module uses crossover connectors (identified with an **x** on the front bezel).

#### Figure B-8: Crossover Configurations

#### Internal Crossover Configuration



#### **External Crossover Configuration**



<sup>1</sup> If screened cabling is required, use BN26M.

<sup>2</sup> If screened crossover cabling is required, use BN28Q.

**Ordering Cables** 

# **Ordering Cables**

### **Fiber Optic Cables**

Port	Cable No.	Cable Description
1000BASE-SX (DGMMF-SX)		Multimode 62.5/125-µm Fiber Cable Assemblies
	BN34A- <i>xx</i> <sup>1</sup>	ST-SC, Multi-Mode, Duplex Cable Assembly
	BN34B- $xx^1$	SC-SC, Multi-Mode, Duplex Cable Assembly
	BN34C- $xx^1$	ST-ST, Multi-Mode, Duplex Cable Assembly
1000BASE-LX (DGSMF-LX)		Single-Mode 9-µm Fiber Cable Assemblies
	BN34R- <i>xx</i> <sup>1</sup>	SC-SC, Single-Mode, Duplex Cable Assembly
	BN34S- $xx^1$	ST-SC, Single-Mode, Duplex Cable Assembly
	BN34T- <i>xx</i> <sup>1</sup>	ST-ST, Single-Mode, Duplex Cable Assembly

<sup>1</sup> Refer to the Cable Length Matrix on page 11 of Appendix B for available cable length options (-*xx*).

<sup>2</sup> A Conditioned Launch (CL) cable is required when connecting 1000BASE-LX line cards to multimode 62.5/125-μm or 50/12-μm fiber-optic cabling systems.

Ordering Cables

### **UTP Cables**

Port	Cable No.	Cable Description
10/100BASE-TX	BN25G-xx <sup>1</sup>	10/100BASE-T Non-Crossover Cable <sup>3</sup> , CAT5
	BN25E- $xx^1$	10/100BASE-T Non-Crossover Cable <sup>3</sup> , CAT5e
	BN24Y- $xx^2$	10/100BASE-T "Y" Cable <sup>3</sup> , UTP CAT5e

<sup>1</sup> Refer to the Cable Length Matrix on page 11 of Appendix B for available cable length options (-xx).

<sup>2</sup> This is a 1 to 2 cable used to break out the two ports from each single RJ-45 connection. This cable is required for achieving a 48-port connection.

<sup>3</sup> The BN25G-*xx* or BN25E-*xx* options are 1-to-1 cables used throughout the remaining system for patching and connection to 10/ 100BASE-TX ports on equipment. Note: Crossover cables can only be used at *one* interface.

Ordering Cables

## Cable Length Matrix

### Cable Lengths (0.5M to 10.0M)

Cable	-OE (0.5M)	-01 (1.0M)	-2E (2.5M)	-03 (3.0M)	-04 (4.0M)	-4E (4.5M)	-07 (7.0M)	-10 (10.0M)
BN24Y	•	•	•	•			•	
BN25G	•	•		•	•		•	
BN25E	٠	•		•	•		•	
BN26M	•	•		•	•		•	
BN28Q	•	•		•	•		•	
BN34A		•	•	•		•		•
BN34B		•	•	•		•		•
BN34C		•	•	•		•		•
BN34R	•	•		•		•	•	•
BN34S	•	•		•		•	•	•
BN34T	٠	٠		٠		٠	٠	٠

### Cable Lengths (15.0M to 61.0M)

Cable	-15 (15.0M)	-20 (20.0M)	-22 (22.0M)	-30 (30.0M)	-31 (31.0M)	-46 (46.0M)	-61 (61.0M)
BN34A		•		•			
BN34B		•		•			
BN34C		•		•			
BN34R	•		•		•	•	•
BN34S	•		•		•	•	•
BN34T	•		•		•	•	•

• = Availabl
# Appendix C

# **Product Specifications**

## **Overview**

### Introduction

This appendix lists product specifications for the MultiSwitch FE Switch 948TXG modules and connectors used with these products.

### In this Appendix

Торіс	Page
Product Specifications	C-2

**Product Specifications** 

# **Product Specifications**

**Table 6-1** lists the product specifications for the MultiSwitch FE Switch 948TXG.**Table 6-1:** Product Specifications

Parameter	Specification
Environment	
Operating Temperature <sup>1</sup>	5° C to 50° C (41° F to 122° F)
Relative Humidity	10% to 95% noncondensing
Altitude	
• Operating	Up to 4,267 m (14,000 ft.)
• Non-operating	Up to 12,192 m (40,000 ft.)
Power	To be Supplied - W total power
	• 9.0 A, 5 Vdc
	• 0.04 A, 12 Vdc
	• 0.5 A, 15 Vdc
Physical	
Height (installed vertically)	44.45 cm (17.5 in.)
Width (installed vertically)	4.45 cm (1.75 in.)
Depth	15.25 cm (6.02 in.); 25.40 cm (10.0 in.) with a DEChub ONE docking station
Weight	3.49 kg (7.70 lb.) with a DEChub ONE docking station
Shock (Class A/B for products weighing under 100 lbs)	10G / $10ms$ half sine pulse in three orthogonal axes
Vibration (Class C)	5 to 200 Hz sine sweep @ 0.25 G limited by 0.02 in (0.5mm) displacement DA* 200 to 500 Hz sine sweep @ 0.10 G
Certification	CE, FCC, TÜV, UL, VCCI, C-TICK

<sup>1</sup> For sites above 2400 m (8,000 feet), decrease the operating temperature specification by 1.8°C for each 1000 m or 3.2°F for each 3200 feet.

# Appendix D

# Accessing and Configuring RMON Groups

## **Overview**

### Introduction

This appendix describes how to access the four RMON groups and how to configure the Alarms and Events groups.

### In This Appendix

Торіс	Page
What Is RMON	D-2
Groups Supported	D-3
How to Access RMON Groups	<b>D-4</b>

What Is RMON

### What Is RMON

RMON is a Remote Network Monitoring Management Information Base (RMON MIB). RMON gathers a wide variety of statistical information about network operations. A typical network consists of multiple network segments with one RMON agent connected to each segment. RMON gathers this information by examining each packet passed on a network segment. Segment statistics are stored in counters within the module. The counters are continuously updated and reset when powered up.

RMON also captures and stores network traffic information. RMON allows you to examine these captured packets or sequences of packets to identify and isolate network operational software or hardware problems.

A list of RMON features is described in Chapter 1.



The online help includes management tasks and information for the RMON Manager application.

**Groups Supported** 

## **Groups Supported**

The four RMON groups supported by this module are Statistics, History, Alarms, and Events. The following table defines these four groups:

This group	Allows you to
Statistics	Obtain an array of operational statistics including:
	• Packets
	Octets
	Broadcasts
	Collisions
	Dropped packets
	• Fragments
	CRC alignment errors
	Undersize/oversize packets
	Multicasts
	• Jabbers
	• 64 octet packets
	• 65 to 127 octet packets
	• 128 to 255 octet packets
	• 256 to 511 octet packets
	• 512 to 1023 octet packets
	• 1024 to 1518 octet packets
History	Obtain a historical representation of statistics for individual ports for customized trend analysis.
Alarms	Set a wide variety of thresholds and sampling intervals on any statistic to create an alarm condition. An alarm causes an event. You may set threshold values as:
	• An absolute value.
	• A rising value.
	• A falling value.
	• A delta value.
Events	Create entries in the monitor log and generate SNMP traps for selected events. You can initiate events by setting an alarm on any

counter. The log includes a description and the time of each event.

### How to Access RMON Groups

This section provides you with procedures that describe how to access the RMON Groups.

RMON Group	To Access/Use these Groups
Statistics	To Be Supplied
History, Alarms, and Events	To Be Supplied

### **Accessing Alarms and Events**

This section describes how to set up a condition to be monitored (an alarm) and an event to be generated once that condition has occurred. You use an SNMP network manager to set up conditions and events. For a more complete description of the alarmTable and eventTable, refer to RFC 1757: S. Waldbusser, "Remote Network Monitoring Management Information Base", 02/10/1995. The event group consists of the eventTable and the logTable. The alarmTable contains configuration entries that define a variable, polling period, and threshold parameters.

If an entry is found to have crossed the threshold value, an event is generated that is processed as specified by your entries in the eventTable. Thus, the eventTable controls the generation and notification of events from the device. The RMON Alarms and Events MIB objects eventDescription, alarmOwner, and eventOwner support up to 127 characters. MIB object eventCommunity supports up to 32 characters. The maximum number of entries that can be placed in the alarmTable is 20 characters. For the eventTable, the maximum is 32 characters.

### **Alarm and Event Table Entries**

Alarm table entries can only be created for SNMP Integer MIB variables of the following types:

- INTEGER
- Counter
- Gauge
- TimeTicks

Table F-1 lists and defines the alarm table entry fields. Table F-2 lists and defines the event table entry fields.

Alarm Table Entry Field	Definition
alarmIndex	An index that uniquely identifies an entry (see note below).
alarmInterval	The interval, in seconds, over which the data is sampled and compared with the rising and falling threshold.
alarmVariable	The object identifier of the particular variable to be sampled.
alarmSampleType	The method of sampling the selected variable and calculating the value to be compared against the thresholds.
alarmValue	The value of the statistic during the sampling period (See Note below).
alarmStartupAlarm	The alarm that may be sent when this entry is first set to valid.
alarmRisingThreshold	Rising (increasing) threshold for the sampled statistic.
alarmFallingThreshold	Falling (decreasing) threshold for the sampled statistic.
alarmRisingEventIndex	The index of the eventEntry that is used when a rising threshold is crossed.
alarmFallingEventIndex	The index of the eventEntry that is used when a falling threshold is crossed.
alarmOwner	The person who configured this entry and is, therefore, using the resources assigned.
alarmStatus	The status of this alarm entry.

Table F-1: Alarm Table Entry Fields



The alarmIndex and alarmValue objects are READ/ONLY. You cannot set these fields. The alarmIndex is implicitly specified when the entry is created. The alarmValue is made available after the current sampling period.

Event Table Entry Field	Definition
eventIndex	An index that uniquely identifies an entry (see note below).
eventDescription	A comment describing this event.
eventType	The type of notification occurs when the threshold is reached.
eventCommunity	If an SNMP trap is to be sent, it is sent to the SNMP community specified.
eventLastTimeSent	The value of sysUpTime at the time this event entry last generated an event. (see note below).
eventOwner	The person who configured this entry and is therefore using the resources assigned to it.
eventStatus	The status of this event entry.

### Table F-2: Event Table Entry Fields



The eventIndex and eventLastTimeSent objects are read-only; you cannot set these fields. The eventIndex is implicitly specified when the entry is created. The eventLast-TimeSent is made available after the current sampling period.

#### **How Traps Work**

SNMP-managed devices are able to send trap messages to network management stations. You configure the IP addresses of NMS "trap sinks" that are to receive the RMON trap messages. For additional information on traps, refer to RFC 1215: M. Rose, "A Convention for Defining Traps for use with the SNMP", 03/27/1991.

The trap IP address can be configured on all MultiSwitch 900 modules through the device's set-up port. With the exception of the DECserver 900 products, the trap IP address can also be added via SNMP set-requests to the device's private MIB (pcomSnmpAuthTrapAddressTable).

You can specify that when an alarm condition is reached, a trap is generated and sent to the trap sinks specified. For additional information on how to specify trap generation, refer to eventType RFC 1757: S. Waldbusser, "Remote Network Monitoring Management Information Base", 02/10/1995.

# Glossary

## **Overview**

This Glossary lists and defines terms used in the MultiSwitch FE Switch 948TXG module documentation.

## Terms

This manual uses the following terms.

Term	Description
Ethernet	Local Area Network (LAN) compatible with the ISO 802-3 ANSI/IEEE 802.3 standards and the Ethernet standards for Carrier Sense Multiple Access with Collision Detection (CSMA/CD) LANs.
Fast Ethernet	A 100-Mbps extension to Ethernet, also referred to as 100BaseT.
	Fast Ethernet uses ISO 802-3 ANSI/IEEE Standard 802.3, but implements the protocol at 100-Mbps. MAC frame formats and sizes are identical to those used by 10 Mbps Ethernet.
Hot-swappable	The removal or insertion of a module into the MultiSwitch 900 without disrupting power to the unit or affecting the connectivity to other modules in the stack or chassis.
	<b>Note:</b> do not simultaneously hot-swap more than one module. Simultaneously inserting or removing more than one module can cause problems with the operation of other installed modules.
Internet Protocol (IP) Address	The format of an IP address is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.); for example, 10.2.8.57.

Term	Description
Console Port	A port on the front of the module that uses an RJ-45 connector. This port is used to configure and manage the module.
Setup Port	Also known as "Console Redirect". The setup port on the MultiSwitch 900 is used to add an IP address and other configuration information to the module via the MultiSwitch 900.
DEChub ONE-MX	A 90-watt power supply, setup port, OBM and AUI ports, and fiber-optic, FDDI or Ethernet LAN connection for a functional module.
DEChub ONE	A 90-watt power supply and setup port interface, OBM and AUI ports for functional module.
10/100BASE-TX	A 10-Mbps Ethernet or 100-Mbps Fast Ethernet connection that uses Category five Twisted Pair over distances of up to 100 meters using an RJ-45 connector. For crossover cabling configurations, refer to Appendix B.
1000BASE-X	A 1000 Mbps full-duplex connection using multimode fiber-optic cable over a distance of 2-250 meters for Short Wavelength (SX) and 2-5,000 meters for Long Wavelength (LX) cable distances. Refer to Chapter 2 for fiber-optics cable size and bandwidth.